VPE User Guide

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In order to provide something beneficial to the M community worldwide, I am making this document available for free use by individuals. I am however retaining ownership of the work and you may not sell it or otherwise profit from its distribution.

Keep the spirit alive, offer a helping hand!

Gregory R Kreis

Greg Kreis

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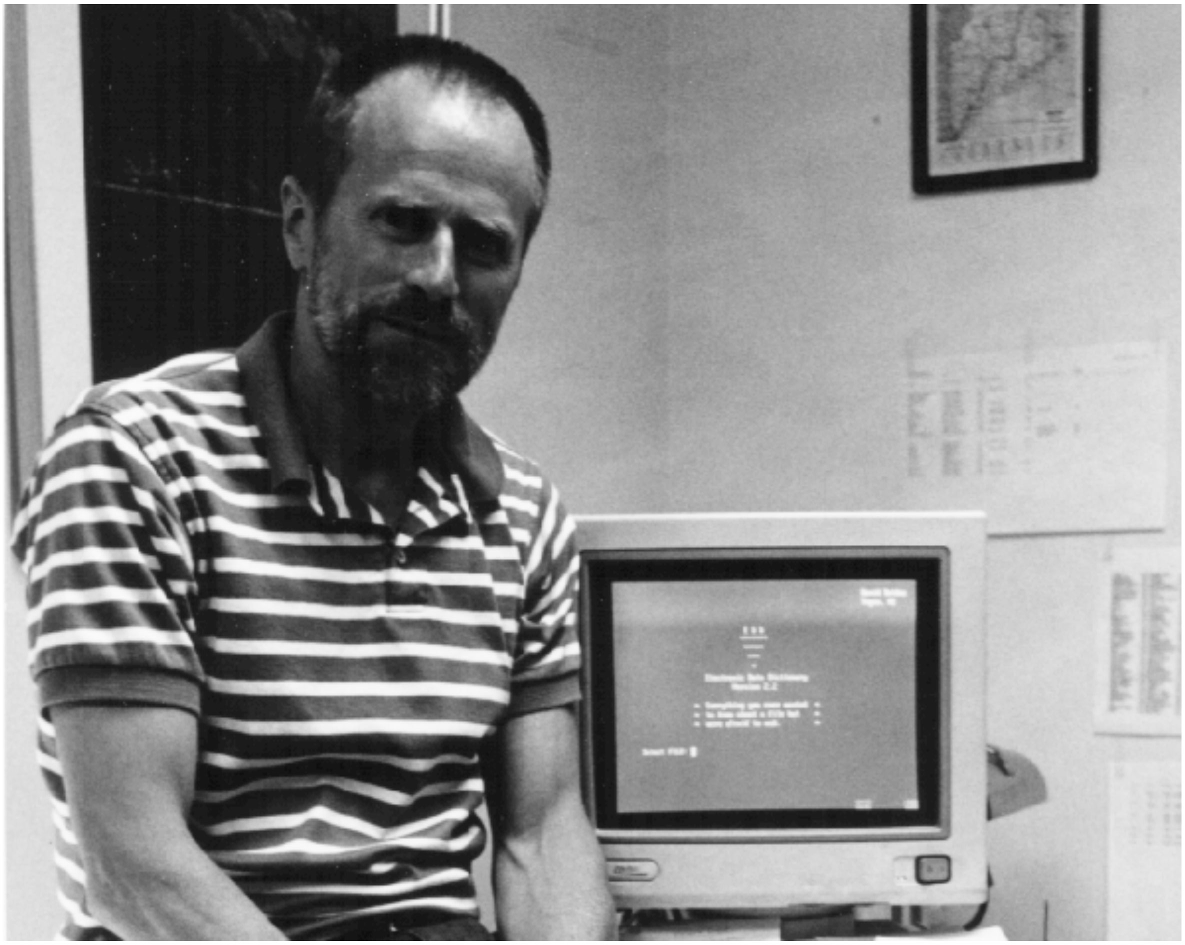
Special Thanks

The MUMPS community owes a special thanks to David Bolduc who authored the VPE software. Dave is a dedicated, hard-working programmer who has graciously created and released this powerful software in the hopes that it is useful to others.



You may contact Dave at his electronic mail address:

BOLDUC.DAVID@FORUM.VA.GOV

If you like the software and use it, send Dave a postcard! All programmer's like to hear their efforts are appreciated.

1 INTRODUCTION

Welcome to a *VPE USer Guide for version 7.1.2*. You will be learning about tools that will make your job easier and more enjoyable. You will also learn how to extend these tools to make a very powerful M programming environment custom tuned to your needs.

1.1 CLASS GOALS AND OBJECTIVES

- Provide background of the M Programmer environment
- Introduce the Victory Programmer Environment (VPE)
- Reveal the benefits of the VPE in overcoming typical programmer mode limitations
- Review some of the typical uses for the VPE software

1.2 PREREQUISITES

Students should have fundamental knowledge of MUMPS and programmer mode to receive maximum benefit from the class. Portions of the class will mention VA File Manager, so knowledge of FileMan will be beneficial, but not essential.

1.3 CONVENTIONS

Terminal sessions and computer listings of globals and routines are found throughout this handout. To make them easier to distinguish, they are displayed enclosed in a box in the Courier font, as shown below. Sometimes, in the interest of saving space on a page, the dialogues will be shortened. These changes will be cosmetic only, leaving the content intact.

```
PUT(REC)        ;deposit line in carrier message
        I $G(REC)'="" S LCNT=LCNT+1,^XMB(3.9,XMZ,2,LCNT,0)=REC
        Q
```

Terminal sessions distinguish the user input by double underlining as shown below.

```
Select OPTION: ENTER OR EDIT FILE ENTRIES
```

Some of the dialogue boxes contain global listings. They were created by one of the tools you will be studying. The form of the listings, shown below, is followed by an actual listing.

```
ref.#) global node = data value
```

Here is a portion of a global in the format mentioned above. Notice how the reference numbers, the far left, make it easier to refer to a node in the listing. When a node is too long to be displayed on one line it wraps around and the equal sign is repeated.

```
 1) ^VECJ(19050.1,0) = INDIVIDUAL^19050.1I^24^23
 2) ^VECJ(19050.1,1,0) = NASIUM,JIM^4
 3) ^VECJ(19050.1,1,1) = 123 WESTOVER RD^APT A^MAIN^13^34567
 4) ^VECJ(19050.1,1,2,0) = ^19050.16A^2^2
 5) ^VECJ(19050.1,1,2,1,0) = 555-1234
 6) ^VECJ(19050.1,1,2,2,0) = 555-1235 MODEM
 7) ^VECJ(19050.1,1,2,"B","555-1234",1) =
 8) ^VECJ(19050.1,1,2,"B","555-1235 MODEM",2) =
 9) ^VECJ(19050.1,1,3,0) = ^^1^1^2900802^^^^
10) ^VECJ(19050.1,1,3,1,0) = Loves to stay after school and play any ball game
                           = .
```

To make it easy to see non-displayable keys that must be typed, the following symbols will be used in the materials to represent them.

SYMBOL	KEY
<PF1>	F1 function key
<PF2>	F2 function key
<PF3>	F3function key
<PF4>	F4 function key
<TAB>	TAB
<AU>	Arrow Up
<AD>	Arrow Down
<AL>	Arrow Left
<AR>	Arrow Right
<SP>	Space bar
<ESC>	Escape

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2 WHAT IS THE VICTORY PROGRAMMER ENVIRONMENT?

2.1 OVERVIEW

Before you can understand the reason for the Victory Programmer Environment (VPE), you need to consider a little MUMPS history. The M standard defines the commands, functions, special variables and other characteristics of the language. It does not, however, define a broad, standard programmer's environment (this situation is so loose that the commands to load, edit and save a routine were never even standardized). As a result, over the years, this part of M has been very open to interpretation. While some M vendors provide much richer programming environments than others, what is missing in every case is a standard.

For example, in some implementations, you invoke a global lister by entering %G, in others, %GL, etc. Some implementations offer full screen editors, while others provide only the most basic of routine editors. Nearly every vendor provides their own way of displaying system status, routine and global directories, etc.

The VPE is much more than traditional programmer mode. While adding features it attempts to standardize the programmer environment by creating it with standard MUMPS code, whenever possible. When vendor specific features are needed, they are hidden and every attempt is made to duplicate the functionality in each implementation.

2.2 ORGANIZATION

The VPE provides a rich environment for those who work in programmer mode (programmers, verifiers, support staff, etc). The modules of the VPE are:

MODULE	NAMESPACE	CONJURING
VGlobal Lister/Editor	^%ZVEMG*	DO ^%ZVEMG
VRoutine Reader	^%ZVEMR*	DO ^%ZVEMR
VRoutine Editor		X ^%ZVEMS("E")
VElectronic Data Dictionary	^%ZVEMD*	DO ^%ZVEMD
VShell	^%ZVEMS*	X ^%ZVEMS
VKernel	^%ZVEMK*	

The following drawing shows how these modules are related to one another. By taking the time to study and memorize this diagram, you will be better able to understand the entire environment provided by the VPE software.

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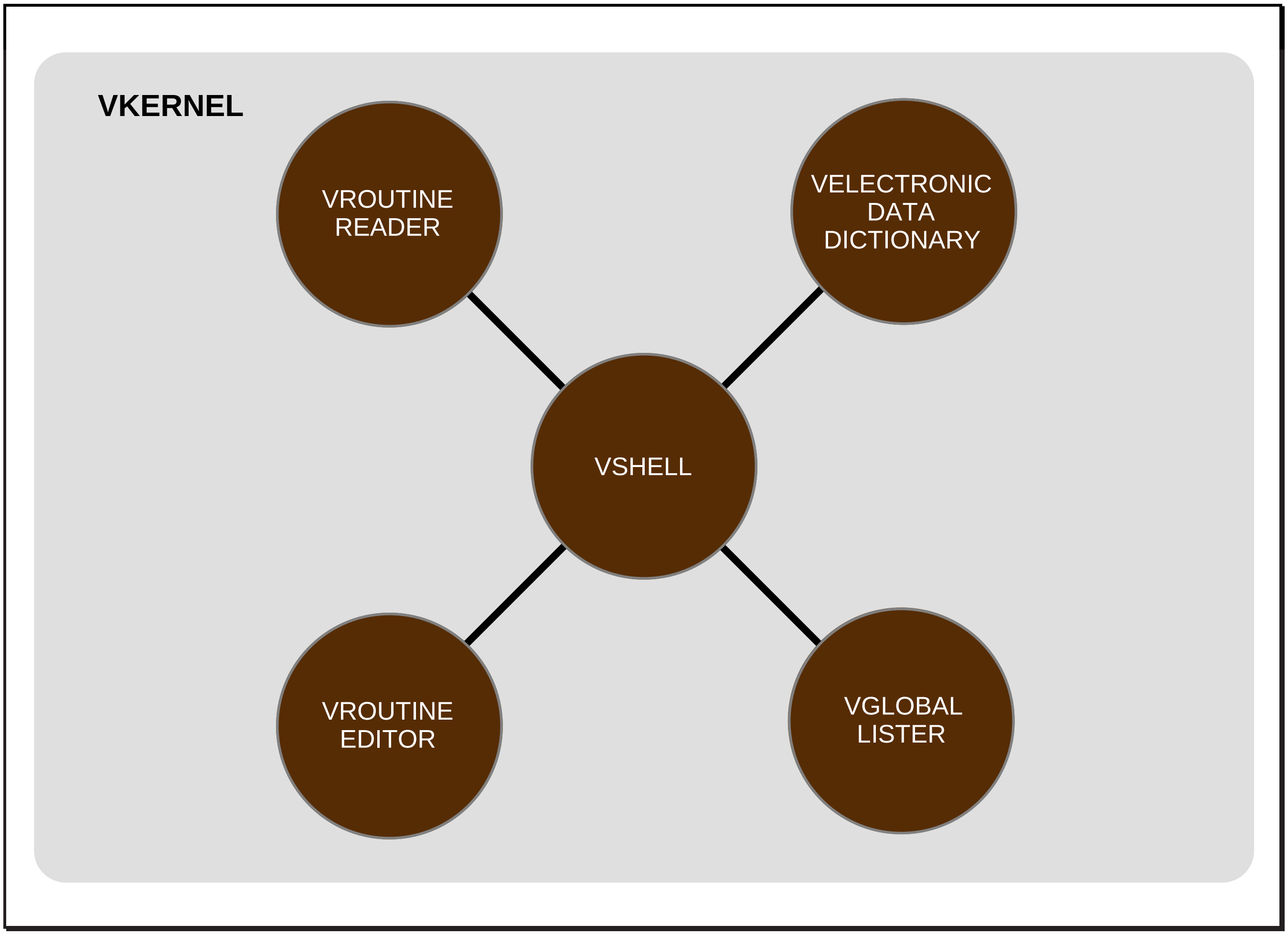

As the above diagram shows, the VShell is the common way to access all of the other VPE modules. (VKernel is not shown on the drawing because it is common to all VPE modules.)

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2.3 WHO SHOULD USE VPE?

Contrary to its name, VPE is not only for programmers. Many people perform technical tasks from programmer mode because it is so powerful. Think of VPE as *enhanced* programmer mode and then you will see that it is ideal for anyone who regularly operates in programmer mode.

VPE is effective if you seldom use programmer mode or if you live in programmer mode! How can this be true? Because the person who occasionally uses programmer mode has a hard time remembering the names of the various system routines. VPE makes them readily available and consistent across implementations. The person who lives in programmer mode will appreciate the keystroke savings and the ability to customize the Shell to their liking. So, wherever you fall in this spectrum, VPE can be useful to you.

2.4 ADAPTABLE TO THE ENVIRONMENT

The VPE routines are designed to function in the presence or absence of either the VA FileMan or the VA Kernel software. In some situations, the presence of the Kernel or FileMan makes the VPE software easier to use.

3 VSHELL - IMPROVED PROGRAMMER MODE

3.1 CONCEPT

The VShell is a series of MUMPS routines and globals nodes that are used to simulate advanced programmer mode. By creating this environment using MUMPS code, it is much easier to add new features.

3.2 COMMON FEATURES: THE VKERNEL

To make the VPE more robust and easy to learn, the VPE modules share a common set of features.

3.2.1 CLH: COMMAND LINE HISTORY

The command line history remembers the lines you recently typed. This makes it very easy to pull up a previous entry and reuse it without having to type it in again. This is a tremendous time saver. When you realize that you can pull up and edit previous lines you have discovered one of the most beneficial uses of the VPE software.

The command line history is supported in many places, such as:

- VShell prompt - >> prompt
- VGlobal lister prompt - Global ^ prompt
- VRoutine Reader and Editor - Select ROUTINE: prompt
- VElectronic Data Dictionary - FILE: prompt

The command line history supports

3.2.2 STANDARD KEYS

The cursor keys are designed to allow moving back and forth in a line, as well as up or down in lines that wrap around the screen. This is very useful for editing and is a feature supported in many places in the VPE software.

VPE uses the <ESC> key, pressed twice, to terminate the current activity. If you prefer, you may enter the ^ character (the caret) to terminate.

3.2.3 SCROLLING LISTS

In many places, VPE supports the use of the arrow keys to scroll in a list. Pressing return when in these lists will take you to the next page, but the ability to scroll forward and backward gives you much finer control.

Learn these keys and their actions and your efforts will be rewarded

3.2.4 USER ID

In order to control access to applications and to allow each person to customize the VPE environment to their personal tastes, each user must have an ID.

When entering the Shell for the first time, you will be asked to create a user ID. When you leave the Shell and come back into it, you will be asked for your User ID each time, unless you are running in a VA Kernel environment. The VA Kernel software keeps track of a user ID for the Kernel and the VShell piggybacks on this by establishing a table of Kernel User IDs that are tied to VShell User IDs.

```
                   U S E R   L I S T   ( B Y   T Y P E )

     TYPE         ID                 NAME                     UCI       DUZ
--------------  -------  ------------------------------  ---------  -------
1. VA KERNEL:
                124     KREIS,GREG                       PRD,AAA    124

2. QWIK:
                124

3. PARAM:
                124
```

3.3 QWIKS

3.3.1 CONCEPT

A QWIK is the VShell name for a single line of M code. Think of a QWIK as a macro. These macros, which come in two varieties, reduce the number of keystrokes required to activate the code they contain. Those created by you are called User QWIKs and those that come with the VShell are called System QWIKS.

- A User QWIK is invoked by preceding the name with a single period
- A System QWIK. is called with two periods in front of the name.

3.3.2 USER QWIKS

You create your own QWIKs to customize your VPE environment. User QWIKs are stored under each user's ID to avoid naming conflicts. This makes it very important for VPE to remember and recognize your User ID. Without proper identification, you will not be able to access your QWIKS.

3.3.2.1 CREATING QWIKS

In order for a QWIK to be of maximum benefit, it must be easily created, changed and deleted. To this end, creating a QWIK is easy. Just press <TAB> to be asked for a QWIK name. If you type in a new name it will create a new QWIK, otherwise it will find the existing QWIK and present it for editing. Review the following example.

```
PRD,AAA>><TAB>

 *** Add/Edit QWIK Command ***

 Enter QWIK: EXAMPLE

 ADD/EDIT USER QWIK
 ----------------------------------------------------------------------------
 1) NAME:  EXAMPLE
 2) CODE:
 3) DESC:
 4) PARAM:
 5) BOX:
 ----------------------------------------------------------------------------
 <ESC><ESC>=Quit  <TAB>=Restart  <ESC>H=Help  <ESC>1-5=Field  <ESC>U=UNsav

 Edit CODE: W !,"The example code is being executed."
 Edit DESCRIPTION: Sample of a simple QWIK
 Edit PARAM NOTES:
 Edit BOX:
```

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3.3.2.2 EDITING QWIKS

In the following dialogue, the EXAMPLE QWIK is edited. First, the <TAB> key was pressed and the name of the desired QWIK was entered. Five fields were then presented for editing. Using the <AL> key, the cursor was moved into the CODE value and edited to include the word 'now'.

```
PRD,AAA>><TAB>

 *** Add/Edit QWIK Command ***

 Enter QWIK: EXAMPLE

ADD/EDIT USER QWIK
 ----------------------------------------------------------------------------
 1) NAME:  EXAMPLE
 2) CODE:  W !,"The example code is being executed."
 3) DESC:  Sample of a simple QWIK
 4) PARAM:
 5) BOX:
 ----------------------------------------------------------------------------
 <ESC><ESC>=Quit  <TAB>=Restart  <ESC>H=Help  <ESC>1-5=Field  <ESC>U=UNsav

 Edit NAME: EXAMPLE
 Edit CODE: W !,"The example code is being executed now."
 Edit DESCRIPTION: Sample of a simple QWIK
 Edit PARAM NOTES:
 Edit BOX:
```

3.3.2.3 DELETING QWIKS

Finally, since QWIKs are so easy to create, why not make them easy to delete so you can readily use QWIKs to meet long or short-term needs. To delete our sample QWIK we take the following steps.

```
>>..QD

 *** Delete QWIK Command ***

 Enter QWIK: EXAMPLE
 Are you sure you want to delete this QWIK?  YES  NO
 Deleted..
```

3.3.2.4 LISTING QWIKS

When you have created several QWIKs you may forget some of their names or the MUMPS code that you placed in them. The <PF1>1 and <PF1>2 key combinations display the current user's QWIKs. <PF1>1 lists the QWIKs with name and description, as shown below.

```
PRD,AAA>> <PF1>1

U S E R   Q W I K S   (.QWIK)    ID: 124                             BOX:
==============================================================================
  1) DOS              True DOS mode
  2) E                Old E editor
  3) FM               Fileman
  4) G                MSM CUA Style Editor
  5) IND              %INDEX
  6) MACRTN           Read CD-ROM text files from Mac and White Knight
  7) MRTN             Mass load of routines over serial lines
  8) PDS              Pioneer FileMan Options
```

The <PF1>2 key generates the list of QWIKs, but substitutes the MUMPS code for descriptions. See below.

```
PRD,AAA>> <PF2>

U S E R   Q W I K S   (.QWIK)    ID: 124                             BOX:
==============================================================================
  1) DOS              !COMMAND
  2) E                X ^%ZVEMS("EOLD")
  3) FM               D P^DI
  4) G                W:$I'=1 !,"Won't work here... " I $I=1 ZL @%1 X ^%G
  5) IND              D ^%INDEX
  6) MACRTN           D ^ZZINPUT
  7) MRTN             D ^ZZINPUT
  8) PDS              D ^VECUCF
```

We will be studying System QWIKs shortly, but it seems appropriate to mention here that <PF1>3 functions like <PF1>1 only the listing is the list of System QWIKs. As you have probably guessed, <PF1>4 lists the System QWIKs with their MUMPS code.

3.3.2.5 CONVERTING COMMAND LINE HISTORY TO A QWIK

Have you ever entered a line of code that you wanted to save somehow so you could repeat it at will, even after having logged off and back on? If you have, you probably found that creating a routine works, but it is inefficient to create an entire routine to store a single line of code. You may also find the process of naming, creating and saving the routine to be tedious. One solution is to put many lines of code in a single routine and reference them using line labels. This works, but it requires even more keystrokes to call the code.

Fortunately the VShell provides a solution. When you pull up a line in the command line history, you can simply press <ESC>Q and it will prompt you for the information required to make the code into a user QWIK. The following example should help.

First, we create a line of code that we realize we will need several more times before our problem is resolved.

```
PRD,AAA>>
R !,"REC#",REC S LOOP=0 F  S LOOP=$O(^VECJ(19050.1,REC,2,LOOP)) Q:'LOOP  W !,$
G(^(LOOP,X))

REC#1
555-1234
555-1235 MODEM
PRD,AAA>>
```

Next, we call the line back from the Command Line History (CLH) and then press <ESC>Q to create the QWIK using the presently displayed code.

```
PRD,AAA>><AU>
R !,"REC#",REC S LOOP=0 F  S LOOP=$O(^VECJ(19050.1,REC,2,LOOP)) Q:'LOOP  W !,$
G(^(LOOP,X))<ESC>Q

 Enter QWIK: FIXVECJ
 Do you want to add as a new QWIK? YES// Y
 Edit DESCRIPTION: Temporary code to diagnose a bug with phone numbers
 Edit PARAM NOTES:
 Edit BOX:
PRD,AAA>>
```

3.3.3 SYSTEM QWIKS

A system QWIK is one that comes pre-defined with the VShell. You may not create or edit them, but, unlike User QWIKs, you can count on them being present wherever you are using the VShell.

3.3.3.1 PRE-DEFINED

The current list of System QWIKs (v 7.13) is shown in the table below. (The table lists the QWIK name followed by its description.)

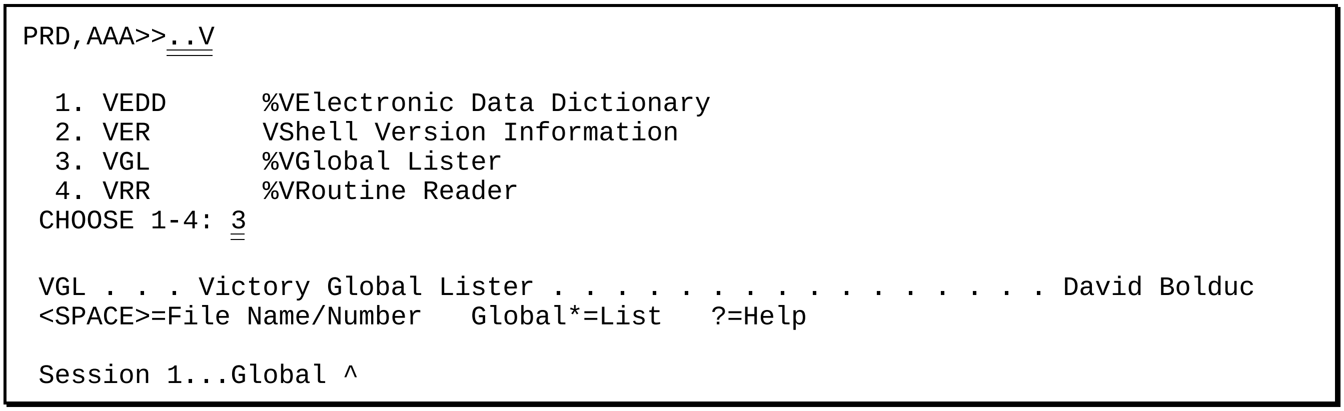
ASCII	ASCII Table
CAL	Calendar Display
	-> %1=Number of Starting Month
CLH	Resequence Command Line History
DIC	Fileman DIC Look-up Template
DOS	DOS Interface
DTMVT	Reset VT-100 in DataTree
E	Routine Editor
	-> %1=Rtn Name
FMC	Fileman Calls
FMTI	Fileman Input Template Display
FMTP	Fileman Print Template Display
FMTS	Fileman Sort Template Display
G	Global List
GCOPY	Global Copy
GD	Global Directory
GDE	Extended Global Directory
GEDIT	Global Edit
GLB	Global Screen Capture
	-> %1=Global Reference %2=How many lines before pause
GR	Global Restore
GS	Global Save
GSE	Global Search
GSEL	Global Select
KEY	Display Escape Sequence for any Key
LF	VA KERNEL Library Functions
LOCKTAB	Lock Table
NOTES	VPE Programmer Notes
PARAM	System Parameters
PUR	Purge VShell Temp Storage Area - %ZVEMS("%")
	-> %1=Number of days to preserve
PURVEDD	Purge Command Line History (VEDD)
PURVGL	Purge Command Line History (VGL)
PURVRR	Purge Command Line History (VRR)
PURVSHL	Purge Command Line History (VShell)
QB	Assign QWIK to Display Box
QC	Copy a QWIK

```
QD        Delete a QWIK
QE        Add/Edit a QWIK
QL1       List User QWIKs & Description
QL2       List User QWIKs & Code
QL3       List System QWIKs & Description
QL4       List System QWIKs & Code
QSAVE     Save/Restore User QWIKs
QV        Add Vendor Specific Code
QVL       List Vendor Specific Code
RCHANGE   Routine Change
RCMP      Routine Compare
RCOPY     Routine Copy to Another UCI
RD        Routine Directory
RDEL      Routine Delete
RR        Routine Restore
RS        Routine Save
RSEARCH   Routine Search
RSEL      Routine Select
RSIZE     Routine Size
RTN       Make NEW Routine
UCI       Switch UCI
UL        List Users DUZ/ID
UTIL      Utilities Menu
VEDD      %VElectronic Data Dictionary
VER       VShell Version Information
VGL       %VGlobal Lister
VRR       %VRoutine Reader
XQH       Help Text for Kernel Menu Options
          -> %1=Kernel Menu Option
ZD        KILL all local variables whose names start with these let
          -> %1=letters %2=letters ...
ZP        ZPrint a Routine
          -> %1=Rtn Name  %2=Page Length
ZR        ZRemove 1 to 9 Routines
          -> %1=Rtn Name  %2=Rtn Name ...
ZW        ZWrite Symbol Table
          -> %1=Starting letter
```

3.3.3.2 INVOKING SYSTEM QWIKS

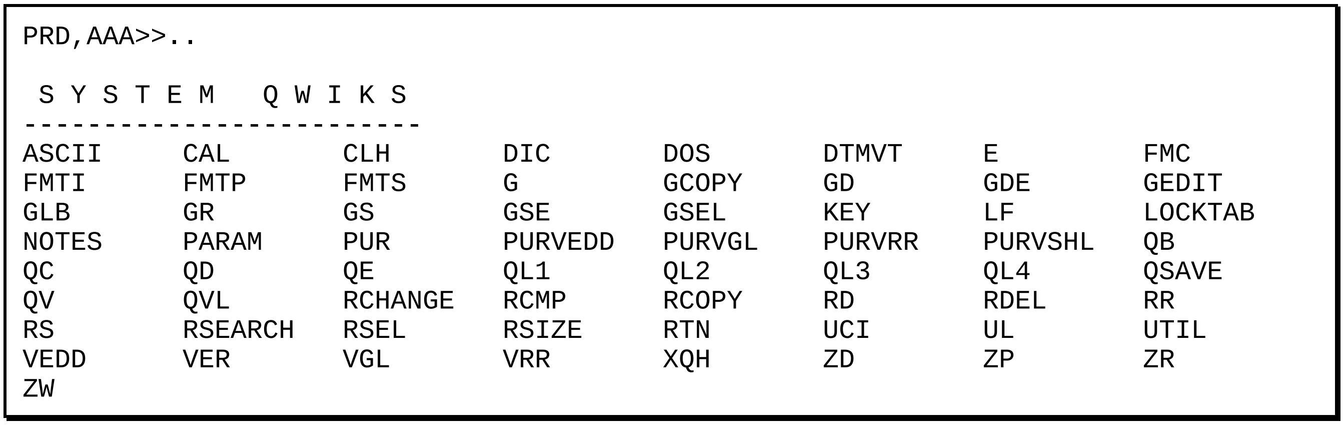
Remember, to invoke a System QWIK, enter two periods and the QWIK name or a part of the name. Look at the following examples.

Below, we enter a portion of a QWIKs name and it presents a list of choices. If a QWIK called V exists, then it will be selected. Avoid creating very short named User QWIKs if you would like to use this feature with your QWIKs.



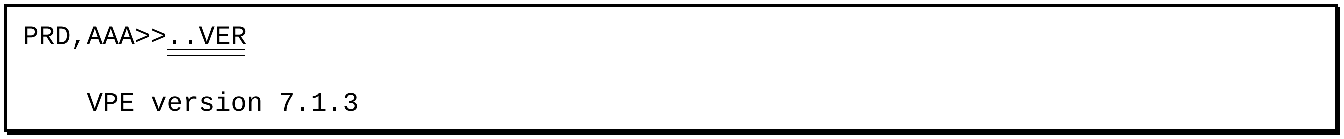
```
PRD,AAA>>..V

  1. VEDD      %VElectronic Data Dictionary
  2. VER       VShell Version Information
  3. VGL       %VGlobal Lister
  4. VRR       %VRoutine Reader
 CHOOSE 1-4: 3

 VGL . . . Victory Global Lister . . . . . . . . . . . . . . . . David Bolduc
 <SPACE>=File Name/Number   Global*=List   ?=Help

 Session 1...Global ^
```

Below is a quick list of all System QWIKs.



```
PRD,AAA>>..

 S Y S T E M   Q W I K S
-------------------------
ASCII     CAL       CLH       DIC       DOS       DTMVT     E         FMC
FMTI      FMTP      FMTS      G         GCOPY     GD        GDE       GEDIT
GLB       GR        GS        GSE       GSEL      KEY       LF        LOCKTAB
NOTES     PARAM     PUR       PURVEDD   PURVGL    PURVRR    PURVSHL   QB
QC        QD        QE        QL1       QL2       QL3       QL4       QSAVE
QV        QVL       RCHANGE   RCMP      RCOPY     RD        RDEL      RR
RS        RSEARCH   RSEL      RSIZE     RTN       UCI       UL        UTIL
VEDD      VER       VGL       VRR       XQH       ZD        ZP        ZR
ZW
```

Here we enter the entire QWIKs name.



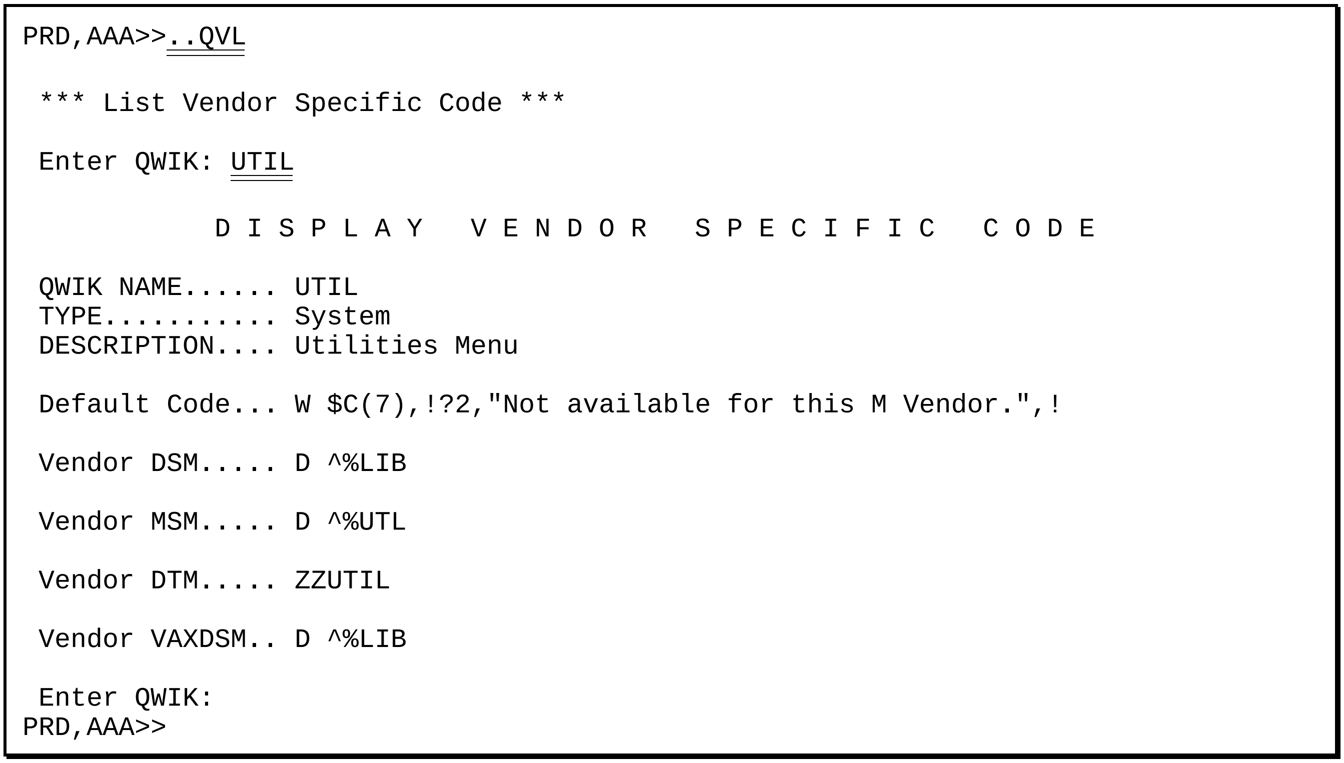
```
PRD,AAA>>..VER

    VPE version 7.1.3
```

3.3.4 VENDOR SPECIFIC CODE

System QWIKs, as well as User QWIKs, can be setup to adapt to each MUMPS implementation. This is very useful when the code that a QWIK performs must vary from implementation to implementation.

You may use ..QVL to view the vendor specific code associated with a QWIK. The example below shows the diverse ways that various MUMPS utility menus are called. The beauty of the UTIL QWIK is that it will determine the proper code to execute, so all you have to remember is UTIL.

If no code is specified for an implementation that you are using, the QWIK will use the default code (shown above the vendor specific code).



```
PRD,AAA>>..QVL

 *** List Vendor Specific Code ***

 Enter QWIK: UTIL

            D I S P L A Y   V E N D O R   S P E C I F I C   C O D E

 QWIK NAME...... UTIL
 TYPE........... System
 DESCRIPTION.... Utilities Menu

 Default Code... W $C(7),!?2,"Not available for this M Vendor.",!

 Vendor DSM..... D ^%LIB

 Vendor MSM..... D ^%UTL

 Vendor DTM..... ZZUTIL

 Vendor VAXDSM.. D ^%LIB

 Enter QWIK:
PRD,AAA>>
```

You can create your own Vendor Specific User QWIKs by using the 'QV - Add Vendor Specific Code' System QWIK (remember, type ..QV).

3.3.5 ADVANCED QWIK TOPICS

Once you have learned how to create a User QWIK, you are ready to move onto more advanced topics. These include ways to pass information to a QWIK, grouping of related QWIKs and preparing QWIKs for shipment to other locations running the VPE software.

3.3.5.1 PARAMETER PASSING

QWIKs can be called with values in an attempt to avoid further prompting. Parameters are additional values placed on the line with the QWIK call. The values must be separated by a space. If a value contains a space, then it must be entered in quotes.

The values passed to the QWIK are stored in the variables %1, %2, %3 up to %9. These variables always exist (they are set to null if no value is passed) so the QWIK code does not need to use $G or $D when sampling the parameters.

```
 ZW         ZWrite Symbol Table
              -> %1=Starting letter
```

Here is an example of a parameterized call to the ZW QWIK shown above. Notice the documentation of the %1 variable (parameter).

```
PRD,AAA>>..ZW IO

==============================================================================
                            S Y M B O L   T A B L E
  1. IO..........: 64
  2. IO(0).......: 64
  3. IO(1,64)....:
  4. IOBS........: $C(8)
  5. IOF.........: #,$C(27,91,50,74,27,91,72)
  6. IOHG........:
......
......
 17. POP.........: 0
 18. U...........: ^
 19. X...........: T
 20. Y...........: 2950603
==============================================================================
<>  <ESC>H=ScrollHelp  F=Find  L=Locate
```

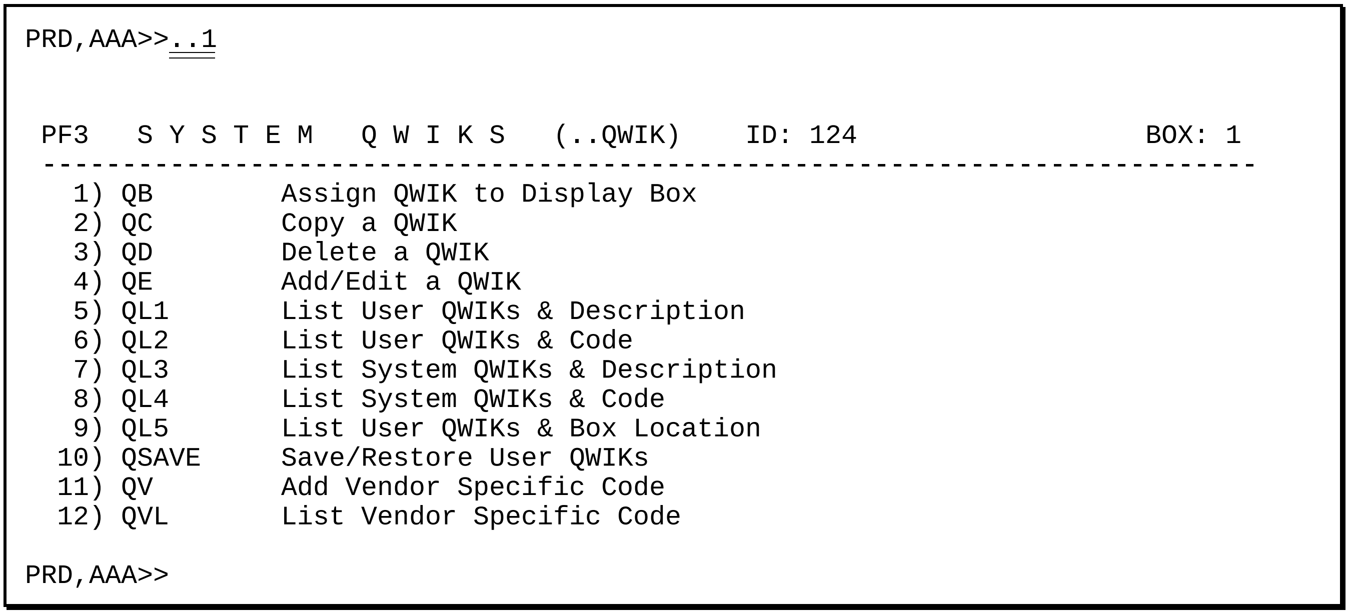
Now, let's look at the ZW code that references the parameters.

```
D WRITE^%ZVEMSPS(%1)
```

3.3.5.2 GROUPING QWIKS IN BOXES

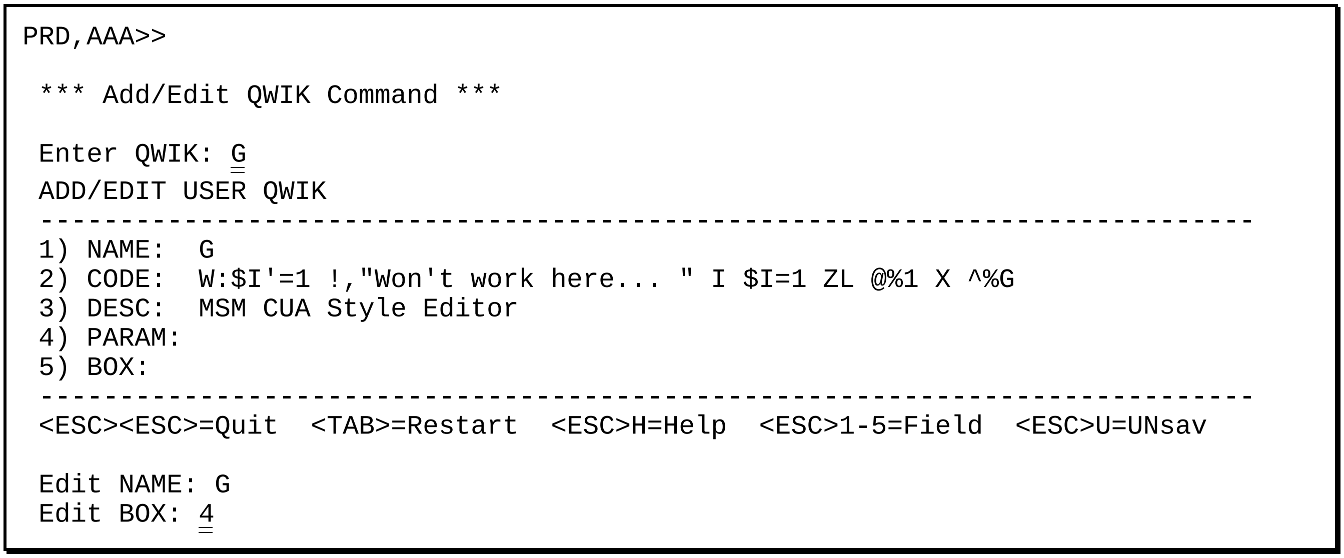
When your list of User QWIKs gets very long, it may be worth the time to group related QWIKs in 'Boxes'. You may create as many boxes as you like. The only restriction is that the box name must be a whole number.

Boxes can be displayed by entering a period followed by the box number for User QWIKs and two periods to view System QWIKs. See the dialogue box below.



```
PRD,AAA>>..1


 PF3   S Y S T E M   Q W I K S   (..QWIK)    ID: 124                 BOX: 1
 ----------------------------------------------------------------------------
   1) QB        Assign QWIK to Display Box
   2) QC        Copy a QWIK
   3) QD        Delete a QWIK
   4) QE        Add/Edit a QWIK
   5) QL1       List User QWIKs & Description
   6) QL2       List User QWIKs & Code
   7) QL3       List System QWIKs & Description
   8) QL4       List System QWIKs & Code
   9) QL5       List User QWIKs & Box Location
  10) QSAVE     Save/Restore User QWIKs
  11) QV        Add Vendor Specific Code
  12) QVL       List Vendor Specific Code

PRD,AAA>>
```

To put a QWIK in a box, press <TAB> at the >> prompt and then edit the BOX field after selecting the desired QWIK.



```
PRD,AAA>>

 *** Add/Edit QWIK Command ***

 Enter QWIK: G
 ADD/EDIT USER QWIK
 ----------------------------------------------------------------------------
 1) NAME:  G
 2) CODE:  W:$I'=1 !,"Won't work here... " I $I=1 ZL @%1 X ^%G
 3) DESC:  MSM CUA Style Editor
 4) PARAM:
 5) BOX:
 ----------------------------------------------------------------------------
 <ESC><ESC>=Quit  <TAB>=Restart  <ESC>H=Help  <ESC>1-5=Field  <ESC>U=UNsav

 Edit NAME: G
 Edit BOX: 4
```

3.3.5.3 I NEED THAT QWIK, QUICK

User QWIKs are the result of your handiwork and you will probably want to have them available wherever you are using programmer mode. The VShell supports the creation of a MUMPS routine that holds your QWIKs so they may be sent and installed at another location.

The QSAVE System QWIK, as shown below, can either copy QWIKs into a selected routine or restore QWIKs from a saved routine.

```
PRD,AAA>>..QSAVE

  *** Save/Restore User QWIKs ***

  1. Save QWIKs
  2. Restore QWIKs

  Select NUMBER: 1
  Enter ROUTINE: ZZQWIK//

  I will save your QWIKs to routine ^ZZQWIK.  Ok? YES//    Please wait..
PRD,AAA>>
```

When restoring QWIKs, you will be asked for a Box and User ID . See the example below.

```
PRD,AAA>>..QSAVE

  *** Save/Restore User QWIKs ***

  1. Save QWIKs
  2. Restore QWIKs

  Select NUMBER: 2
  Enter ROUTINE: ZZQWIK//
  Enter BOX:
  Enter ID: 124

 ABC CALC DOS EDIT FIXFILE FIXVECJ FM GD GE GLOAD GSAVE IND MM NOTES
 PACK PACKREP PFM QWIKQWIK RCOPY RD RLOAD RPRINT RS RSAVE SS TE TMON
 TO VENDOR VETL VIEW ZE ZP ZTPP ZUCI ZW

 This routine contains the above QWIK(s) which already exist on your
 system. If I continue I will overwrite them. You may stop the load
 here and edit ^ZZQWIK to change the names.

 Should I continue? YES//
```

3.4 MISCELLANEOUS FEATURES

3.4.1 MONITORING FOR GLOBAL KILLS

The VShell scans each line of code entered at the >> prompt to see if it contains code to kill a global. If it finds such, it asks if you really wish to proceed, since killing certain globals or global nodes could be a costly mistake. The following dialogue illustrates this very useful feature.

```
PRD,AAA>>S GREG=45 K ^GREG W GREG

   WARNING: Your code may be killing a global.
   Should I execute your code: NO// Y
45
```

The default answer to the question to proceed is set by using the PARAM QWIK.

3.4.2 USER PARAMETERS

VPE allows each programmer to customize some of VPE features. These features are listed in the example below.

```
PRD,AAA>>..PARAM
                      S Y S T E M   P A R A M E T E R S
 =============================================================================

  1. Global Kill......... NO            Default answer to global kill warning

  2. Prompt.............. ACTIVE        ACTIVE Prompt includes UCI,VOL>>

  3. Time-out............ 999999        Shell Time-out length in seconds

  4. SAVE Routine........ ZZQWIK        Routine that holds your saved QWIKs

  5. <DEL> & <BS> Keys... SAME          <DELETE> different from <BACKSPACE>

 =============================================================================

  Select NUMBER:
```

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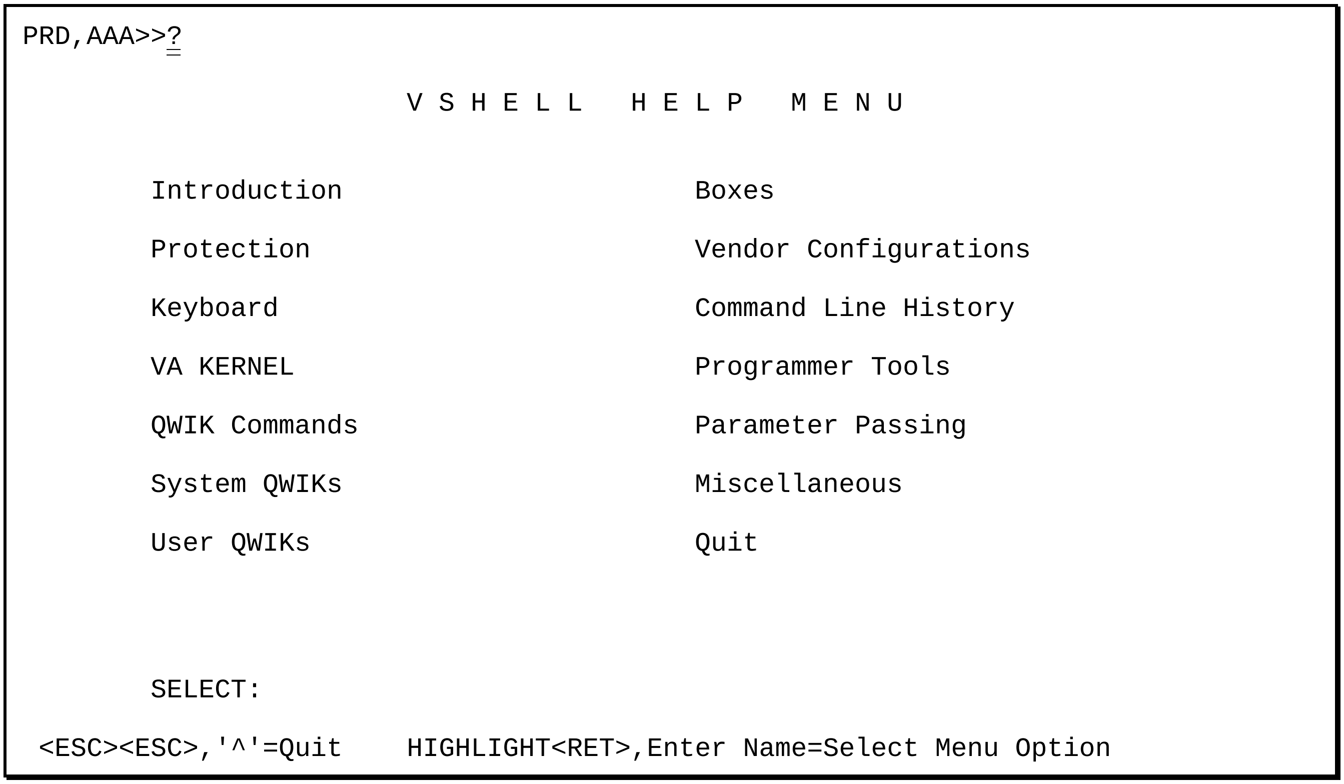
3.4.3 TIME OUT PROCESSING

If you want code to be performed when you time out at the VShell >> prompt, create a User QWIK called TO. This is a special name that VShell looks for when a timeout occurs.

(See the online VPE documentation under Miscellaneous.)

3.4.4 ONLINE HELP

VPE has extensive online help text only a ? away. The topics below each present a scrollable list of help text.



```
PRD,AAA>>?

                        V S H E L L   H E L P   M E N U


        Introduction                      Boxes

        Protection                        Vendor Configurations

        Keyboard                          Command Line History

        VA KERNEL                         Programmer Tools

        QWIK Commands                     Parameter Passing

        System QWIKs                      Miscellaneous

        User QWIKs                        Quit



        SELECT:
 <ESC><ESC>,'^'=Quit    HIGHLIGHT<RET>,Enter Name=Select Menu Option
```

4 MUMPS TOOLS

4.1 VGL - GLOBAL LISTER

One of the most common tools used in programmer mode is the global lister. Each MUMPS vendor seems to have their own twist on how to design this tool which makes it hard to master them all. As MUMPS systems are attached to larger and larger networks, the chances of coming across different global listers increase.

The VGlobal Lister (VGL) is an enhanced global lister based on ANSI MUMPS code, so it is available on all MUMPS implementations. The following dialogue illustrates a typical session with the VGL.

```
PRD,AAA>>..VGL

 The VGlobal Lister . . . . . . . . . . . . . . . . . . . . . . . David Bolduc
 <RETURN>=Quit   <SPACE>=File Name or Number   ?=Help

  Session 1...Global ^VECJ(19050.1

==================================[Session 1]==================================
  1) ^VECJ(19050.1,0) = INDIVIDUAL^19050.1I^46^43
  2) ^VECJ(19050.1,1,0) = NASIUM,JIM^11
  3) ^VECJ(19050.1,1,1) = 3783 UPLAND DR^APT A^MARIETTA^1^34567
  4) ^VECJ(19050.1,1,2,0) = ^19050.16A^2^2
  5) ^VECJ(19050.1,1,2,1,0) = 555-1234
  6) ^VECJ(19050.1,1,2,2,0) = 555-1235 MODEM
  7) ^VECJ(19050.1,1,2,"B","555-1234",1) =
  8) ^VECJ(19050.1,1,2,"B","555-1235 MODEM",2) =
  9) ^VECJ(19050.1,1,3,0) = ^^3^3^2950601^^^
 10) ^VECJ(19050.1,1,3,1,0) = Loves to stay after school and play any ball gam
                            = e.
 11) ^VECJ(19050.1,1,3,2,0) =
 12) ^VECJ(19050.1,1,3,3,0) = It allows me to edit more than one line?
 13) ^VECJ(19050.1,1,4) = 2891220
 14) ^VECJ(19050.1,2,0) = SKYWALKER,LUKE^3
 15) ^VECJ(19050.1,2,1) = 12 MILKY WAY^^TWILIGHT ZONE
 16) ^VECJ(19050.1,2,4) = 2900106
 17) ^VECJ(19050.1,3,0) = WILSON,JAMES^3
 18) ^VECJ(19050.1,3,1) = 1821^^FAIRBANKS^2^12314
 19) ^VECJ(19050.1,3,2,0) = ^19050.16A^1^1
==============================================================================
<>  'n'=Pieces  A=Alt  G=Goto  S'n'=Skip  C=CdSrch  ?=Help  M=More...
 Select: 3
```

Notice how the above display stops, one screen at a time. To the far left of each node is a reference number to make it easier to select a specific, as was done in this example.

4.1.1 SHORTCUTS

A Nice feature of the VGL is command line history. If you wish to pull up an earlier global listing, simply recall the earlier one and edit it. The example below shows pressing the up-arrow cursor key three times to get to the desired value.

```
PRD,AAA>>..VGL

 The VGlobal Lister . . . . . . . . . . . . . . . . . . . . . . . . David Bolduc
 <RETURN>=Quit   <SPACE>=File Name or Number   ?=Help

  Session 1...Global ^<AU>
^DIC(200<AU>
^VECJ(19050.1<AU>
^%ZVEMS
```

There is a convenient way to list the top level notes in a global when using VGL. Just enter the global name followed by an * when asked for the Global.

```
 Session 1...Global ^XMB*

   1. ^XMB(1 ...............: KERNEL SITE PARAMETERS
   2. ^XMB(3.51 ............: SPOOL DOCUMENT
   3. ^XMB(3.6 .............: BULLETIN
   4. ^XMB(3.7 .............: MAIL BOX
.......
  13. ^XMB("NUM" ...........: 236
  14. ^XMB("PARENT" ........: 48
  15. ^XMB("POST" ..........: 2780
  16. ^XMB("TIMEZONE" ......: EDT
```

The global display window is a scrollable list. By pressing the <AD> or <AU> keys, you can move forward or backward in the list.

```
=================================[Session 1]==================================
  3) ^VECJ(19050.1,0) = INDIVIDUAL^19050.1I^46^43
  4) ^VECJ(19050.1,1,0) = NASIUM,JIM^11
  5) ^VECJ(19050.1,1,1) = 3783 UPLAND DR^APT A^MARIETTA^1^34567
......
 19) ^VECJ(19050.1,3,0) = WILSON,JAMES^3
 20) ^VECJ(19050.1,3,1) = 1821^^FAIRBANKS^2^12314
 21) ^VECJ(19050.1,3,2,0) = ^19050.16A^1^1
=============================================================================
<>  'n'=Pieces  A=Alt  G=Goto  S'n'=Skip  C=CdSrch  ?=Help  M=More...
```

4.1.2 NODE AND SUBSCRIPT EDITING

VGL supports the editing of global nodes as well as subscripts. To edit a global node, you enter the command EV (edit value) and to edit the subscript, you enter ES (edit subscript). When editing, the cursor keys are fully functional.

```
=================================[Session 1]=================================
  3) ^TMP("DDS",5,14,2,37) = 0,
  4) ^TMP("DDS",5,14,2,37,"0,") = 1
  5) ^TMP("DDS",5,14,2,37,"0,","GL") =
  6) ^TMP("DDS",5,14,"F0","0,","1,37","D") =
......
......
 20) ^TMP("DDS",11,14,1,36,"3,","GL") = ^VECJ(19050.2,
 21) ^TMP("DDS",11,14,2,37) = 0,
 22) ^TMP("DDS",11,14,2,37,"0,") = 1
==============================================================================
<>  'n'=Pieces  A=Alt  G=Goto  S'n'=Skip  C=CdSrch  ?=Help  M=More...
 Select: EV
 Enter REF NUMBER: 20
```

You are presented with the following display and can cursor into the node's value and edit it.

```
                                EDIT GLOBAL VALUE


 ^TMP("DDS",11,14,1,36,"3,","GL") = ^VECJ(19050.2,
```

Entering ES instead of EV and selecting a node, you are able to edit its subscripts. (At present, you are not allowed to edit the subscripts of a node that has descendants.)

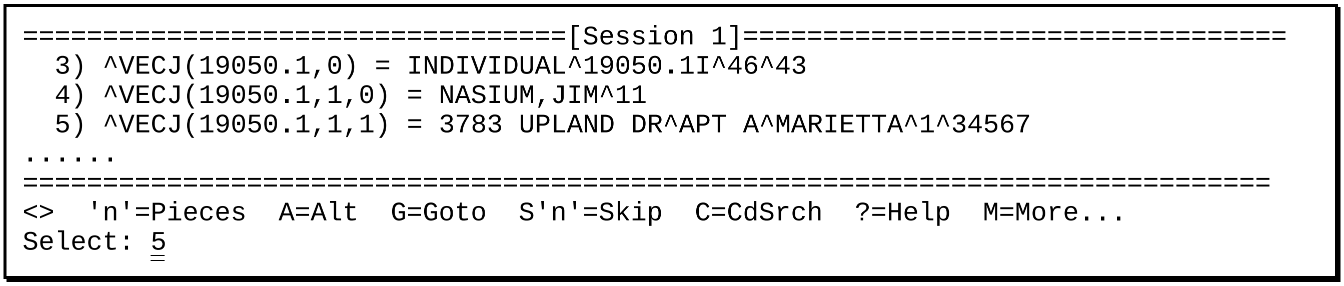
```
 Select: ES
 Enter REF NUMBER: 5
                             EDIT GLOBAL SUBSCRIPT

 ^TMP("DDS",5,14,2,37,"0,","GL")
      "DDS",5,14,2,37,"0,","GL"
```

4.1.3 FILEMAN AWARE

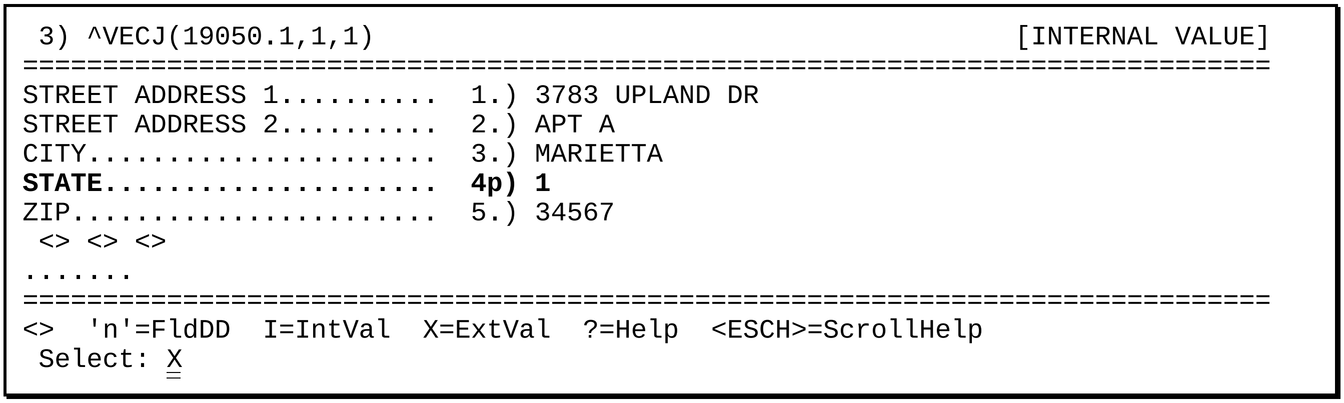
The VGL program is aware of File Manager so it can recognize when it is listing a global that is really a File Manager file. Based on this knowledge, it reverse engineers the global to track back to the relevant DD to provide you with the information you need.

First, select a node from a FM file by using its number displayed to the left of the node.



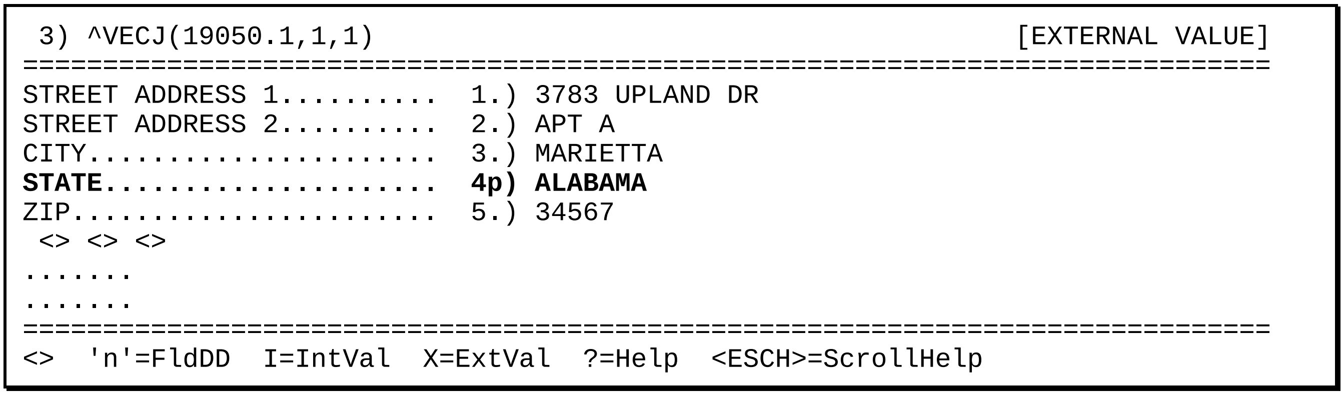
```
==================================[Session 1]==================================
  3) ^VECJ(19050.1,0) = INDIVIDUAL^19050.1I^46^43
  4) ^VECJ(19050.1,1,0) = NASIUM,JIM^11
  5) ^VECJ(19050.1,1,1) = 3783 UPLAND DR^APT A^MARIETTA^1^34567
......
===============================================================================
<>  'n'=Pieces  A=Alt  G=Goto  S'n'=Skip  C=CdSrch  ?=Help  M=More...
Select: 5
```

The initial screen display will show data in its internal format, as shown below. Note the STATE field's value.



```
 3) ^VECJ(19050.1,1,1)                                         [INTERNAL VALUE]
===============================================================================
STREET ADDRESS 1..........  1.) 3783 UPLAND DR
STREET ADDRESS 2..........  2.) APT A
CITY......................  3.) MARIETTA
STATE.....................  4p) 1
ZIP.......................  5.) 34567
 <> <> <>
.......
===============================================================================
<>  'n'=FldDD  I=IntVal  X=ExtVal  ?=Help  <ESCH>=ScrollHelp
 Select: X
```

By selecting X, as shown above, the display changes to the one shown below. Note that the state pointer has been evaluated.



```
 3) ^VECJ(19050.1,1,1)                                         [EXTERNAL VALUE]
===============================================================================
STREET ADDRESS 1..........  1.) 3783 UPLAND DR
STREET ADDRESS 2..........  2.) APT A
CITY......................  3.) MARIETTA
STATE.....................  4p) ALABAMA
ZIP.......................  5.) 34567
 <> <> <>
.......
.......
===============================================================================
<>  'n'=FldDD  I=IntVal  X=ExtVal  ?=Help  <ESCH>=ScrollHelp
```

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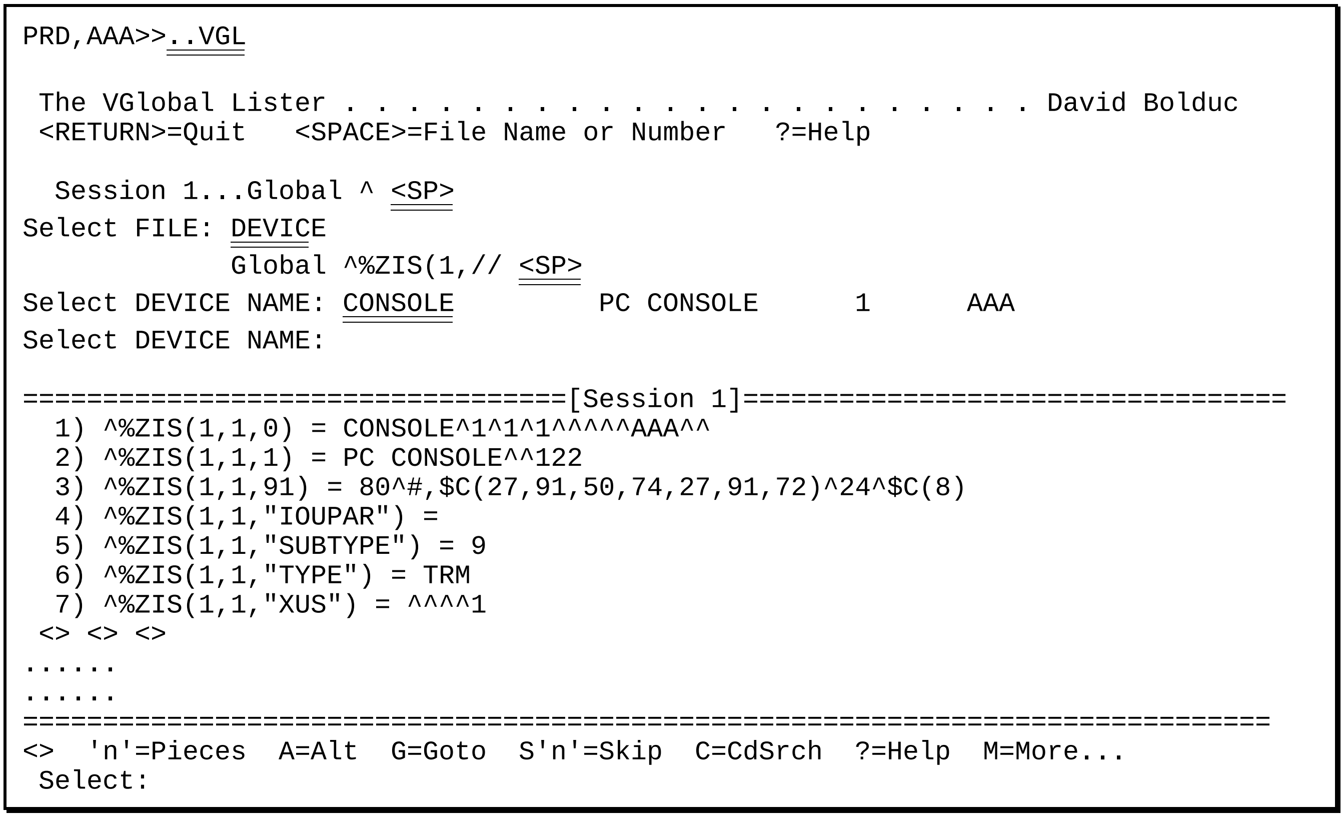
In the following dialogue box, you see how FileMan influences the VGL global selection process. If you enter a global name of a space, then VGL asks you to look up a file in the File Manager's File of Files. With this information, it can derive the file's global reference. Going a step further, you can enter another space at the `Global ^%ZIS(1,//` prompt and be allowed to select a batch of records from the selected file, one at a time.



```
PRD,AAA>>..VGL

 The VGlobal Lister . . . . . . . . . . . . . . . . . . . . . . David Bolduc
 <RETURN>=Quit   <SPACE>=File Name or Number   ?=Help

  Session 1...Global ^ <SP>
Select FILE: DEVICE
             Global ^%ZIS(1,// <SP>
Select DEVICE NAME: CONSOLE         PC CONSOLE      1      AAA
Select DEVICE NAME:

==================================[Session 1]=====================================
  1) ^%ZIS(1,1,0) = CONSOLE^1^1^1^^^^^AAA^^
  2) ^%ZIS(1,1,1) = PC CONSOLE^^122
  3) ^%ZIS(1,1,91) = 80^#,$C(27,91,50,74,27,91,72)^24^$C(8)
  4) ^%ZIS(1,1,"IOUPAR") =
  5) ^%ZIS(1,1,"SUBTYPE") = 9
  6) ^%ZIS(1,1,"TYPE") = TRM
  7) ^%ZIS(1,1,"XUS") = ^^^^1
 <> <> <>
......
......
==============================================================================
<>  'n'=Pieces  A=Alt  G=Goto  S'n'=Skip  C=CdSrch  ?=Help  M=More...
 Select:
```

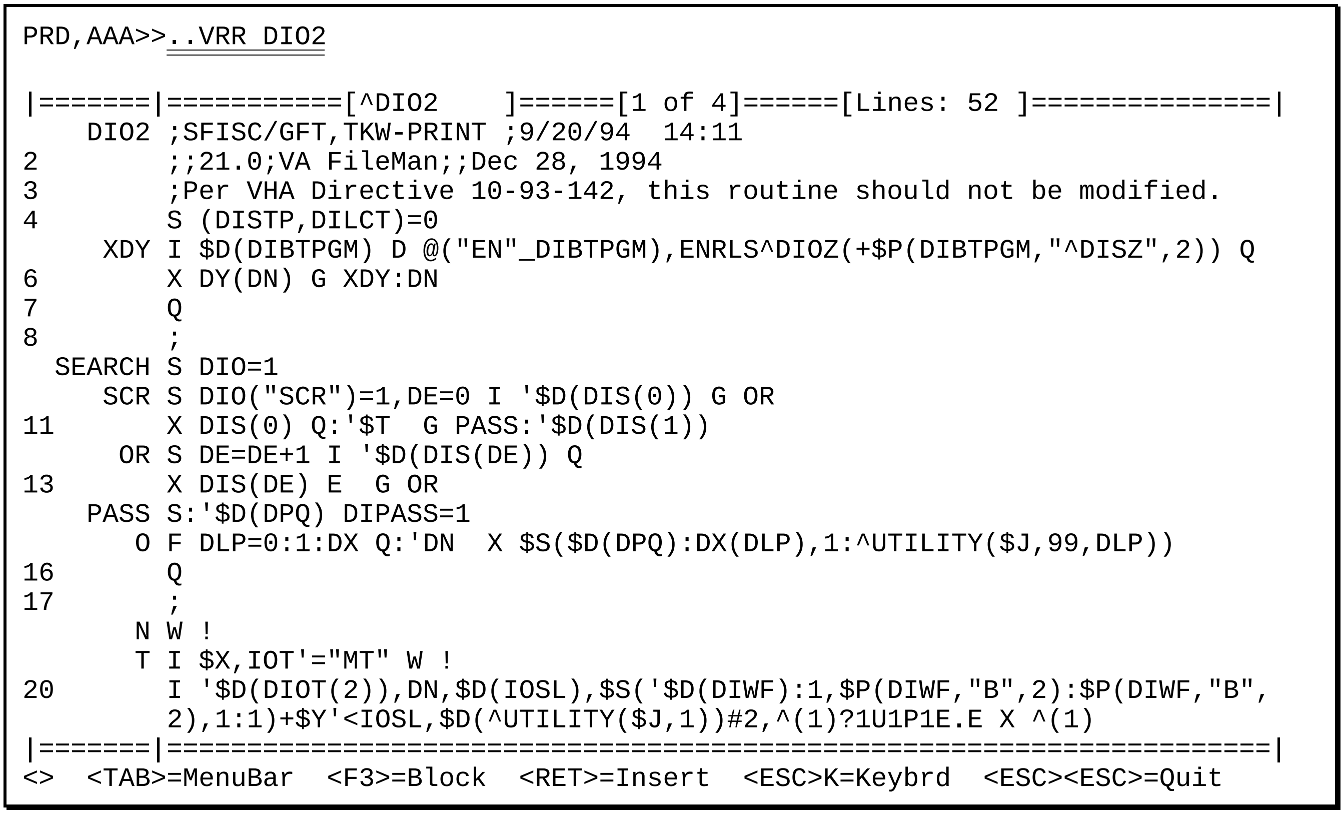
These are just a few of the MANY features of the VGL program. Take the time to explore this module's commands and online documentation by entering ? for help.

4.2 VRR - ROUTINE READER

The VPE Routine Reader allows you to open up to four routines at a time. This is beneficial when trying to track the flow of control as one program calls another, etc. You may navigate within the routines using the cursor keys.

Another benefit of the routine reader is access to online FileMan documentation and a table of ASCII characters and their codes. Extensive online help for Routine Reader commands is available by entering a ?.

You can access the VGL Global Lister and the VEDD Electronic Data Dictionary from within the Routine Reader so you do not have to leave the routine listing to view global or DD information. [We will be discussing the VEDD module in the next section.]



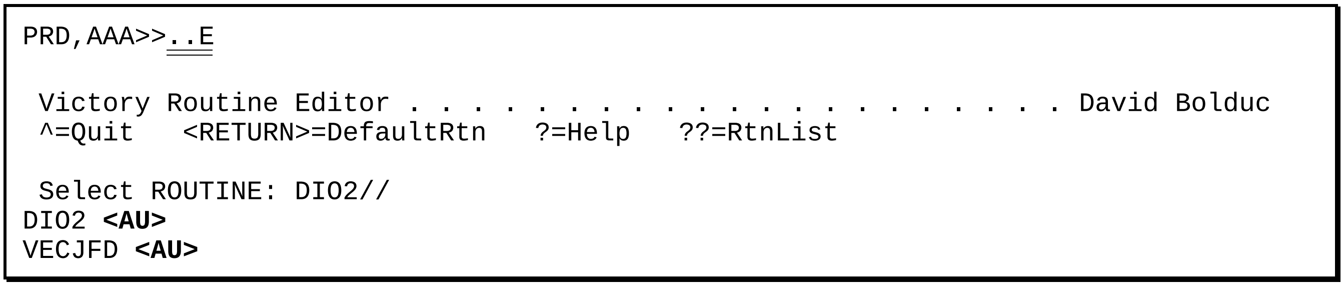
```
PRD,AAA>>..VRR DIO2

|=======|===========[^DIO2    ]======[1 of 4]======[Lines: 52 ]===============|
    DIO2 ;SFISC/GFT,TKW-PRINT ;9/20/94  14:11
2        ;;21.0;VA FileMan;;Dec 28, 1994
3        ;Per VHA Directive 10-93-142, this routine should not be modified.
4        S (DISTP,DILCT)=0
     XDY I $D(DIBTPGM) D @("EN"_DIBTPGM),ENRLS^DIOZ(+$P(DIBTPGM,"^DISZ",2)) Q
6        X DY(DN) G XDY:DN
7        Q
8        ;
  SEARCH S DIO=1
     SCR S DIO("SCR")=1,DE=0 I '$D(DIS(0)) G OR
11       X DIS(0) Q:'$T  G PASS:'$D(DIS(1))
      OR S DE=DE+1 I '$D(DIS(DE)) Q
13       X DIS(DE) E  G OR
    PASS S:'$D(DPQ) DIPASS=1
       O F DLP=0:1:DX Q:'DN  X $S($D(DPQ):DX(DLP),1:^UTILITY($J,99,DLP))
16       Q
17       ;
       N W !
       T I $X,IOT'="MT" W !
20       I '$D(DIOT(2)),DN,$D(IOSL),$S('$D(DIWF):1,$P(DIWF,"B",2):$P(DIWF,"B",
         2),1:1)+$Y'<IOSL,$D(^UTILITY($J,1))#2,^(1)?1U1P1E.E X ^(1)
|=======|=====================================================================|
<>  <TAB>=MenuBar  <F3>=Block  <RET>=Insert  <ESC>K=Keybrd  <ESC><ESC>=Quit
```

Pressing the <TAB> key will take you to a menu bar at the bottom of the screen providing access to online help (?) and other commands.

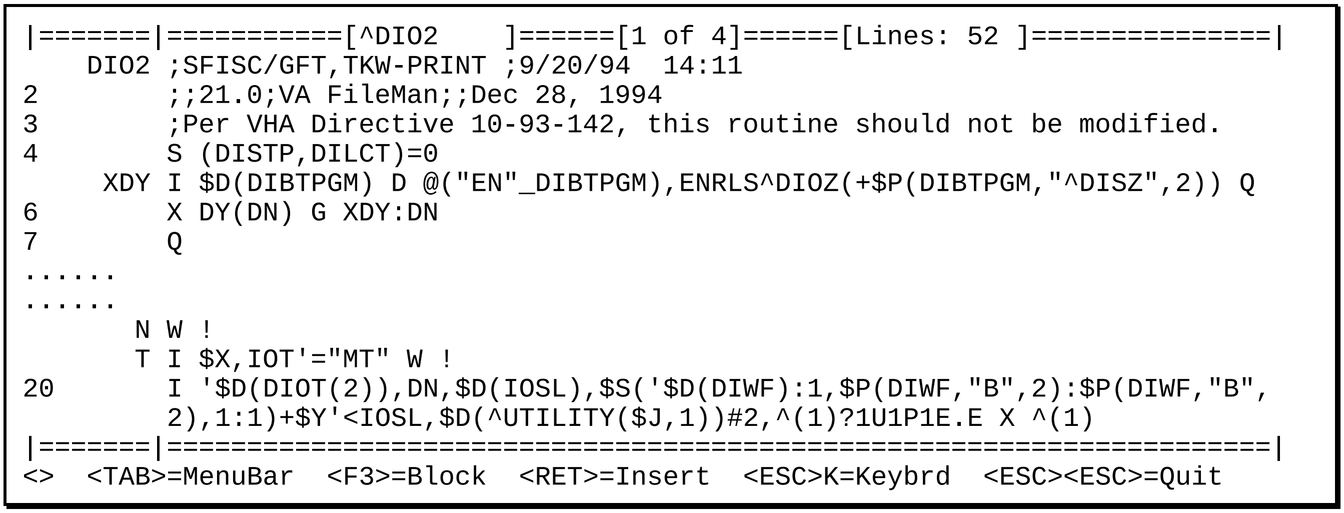
4.3 E - ROUTINE EDITOR

VPE contains a new, powerful full screen editor that works on any ANSI standard device. This means you don't have to be at a PC console to use this editor. It is available over a dial up connection as well as at the console!

The E Routine Editor is very similar to the VRR Routine Reader in appearance and function. It provides a command line history of last edited routines, as shown below or it can be called with the routine to be edited as a parameter.



```
PRD,AAA>>..E

 Victory Routine Editor . . . . . . . . . . . . . . . . . . . . . David Bolduc
 ^=Quit   <RETURN>=DefaultRtn   ?=Help   ??=RtnList

 Select ROUTINE: DIO2//
DIO2 <AU>
VECJFD <AU>
```

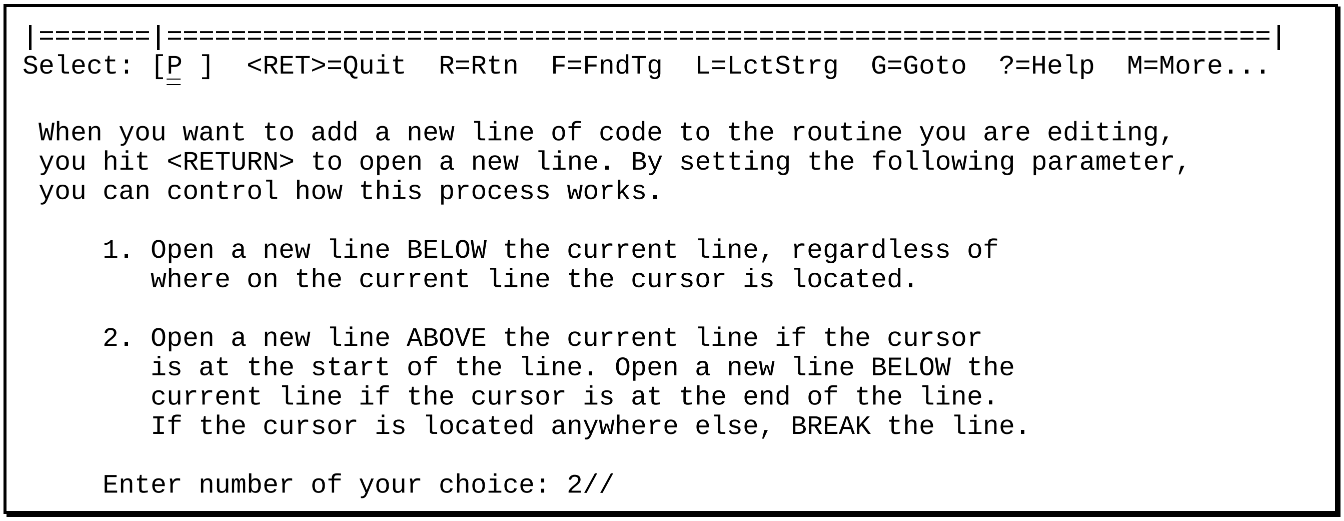


```
|=======|===========[^DIO2    ]======[1 of 4]======[Lines: 52 ]===============|
    DIO2 ;SFISC/GFT,TKW-PRINT ;9/20/94  14:11
2        ;;21.0;VA FileMan;;Dec 28, 1994
3        ;Per VHA Directive 10-93-142, this routine should not be modified.
4        S (DISTP,DILCT)=0
     XDY I $D(DIBTPGM) D @("EN"_DIBTPGM),ENRLS^DIOZ(+$P(DIBTPGM,"^DISZ",2)) Q
6        X DY(DN) G XDY:DN
7        Q
......
......
       N W !
       T I $X,IOT'="MT" W !
20       I '$D(DIOT(2)),DN,$D(IOSL),$S('$D(DIWF):1,$P(DIWF,"B",2):$P(DIWF,"B",
         2),1:1)+$Y'<IOSL,$D(^UTILITY($J,1))#2,^(1)?1U1P1E.E X ^(1)
|=======|=====================================================================|
<>  <TAB>=MenuBar  <F3>=Block  <RET>=Insert  <ESC>K=Keybrd  <ESC><ESC>=Quit
```

The Routine Reader and Editor share a unique screen display. Line labels are right-justified and unlabeled lines are numbered.

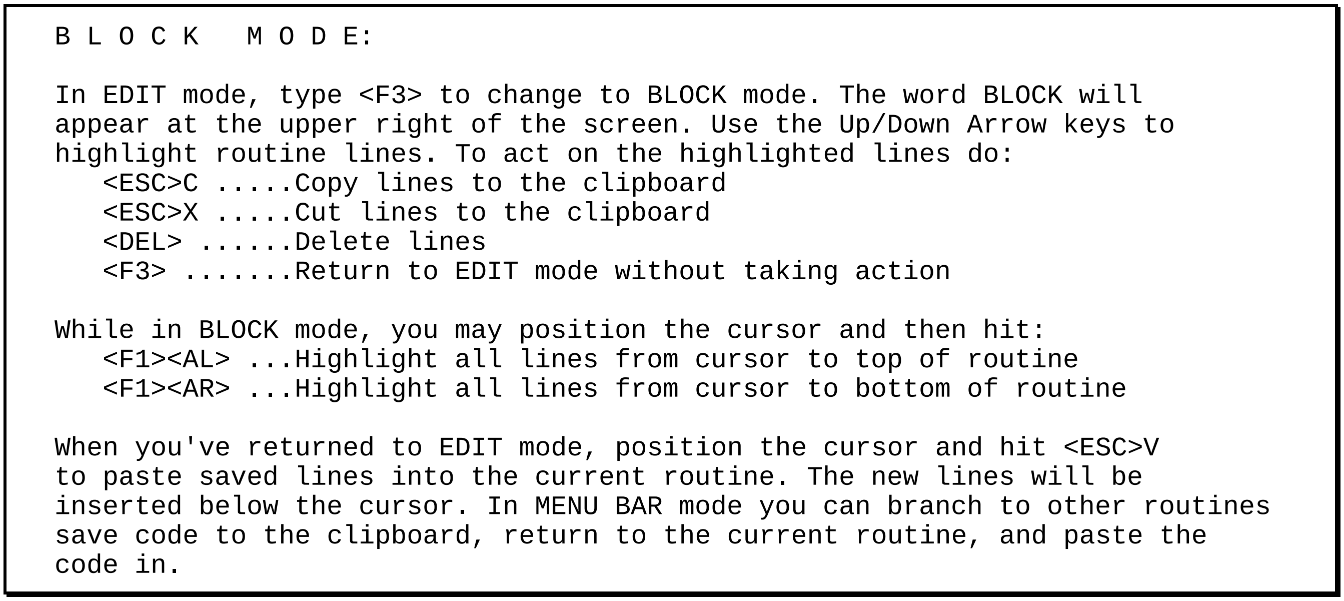
The Routine Editor gives the programmer the chance to customize the meaning of pressing the RETURN key when in the editor.

To get to the menu of choices, press <TAB> when in the editor and enter P at the Select prompt (shown below). The menu dialog explains the two options.



```
|=======|=====================================================================|
Select: [P ]  <RET>=Quit  R=Rtn  F=FndTg  L=LctStrg  G=Goto  ?=Help  M=More...

 When you want to add a new line of code to the routine you are editing,
 you hit <RETURN> to open a new line. By setting the following parameter,
 you can control how this process works.

     1. Open a new line BELOW the current line, regardless of
        where on the current line the cursor is located.

     2. Open a new line ABOVE the current line if the cursor
        is at the start of the line. Open a new line BELOW the
        current line if the cursor is at the end of the line.
        If the cursor is located anywhere else, BREAK the line.

     Enter number of your choice: 2//
```

The Routine Editor supports cut and paste operations within the current routine or by navigating to another routine to get the cutting to be pasted into the edited routine (see the VPE online documentation below).



```
  B L O C K   M O D E:

  In EDIT mode, type <F3> to change to BLOCK mode. The word BLOCK will
  appear at the upper right of the screen. Use the Up/Down Arrow keys to
  highlight routine lines. To act on the highlighted lines do:
     <ESC>C .....Copy lines to the clipboard
     <ESC>X .....Cut lines to the clipboard
     <DEL> ......Delete lines
     <F3> .......Return to EDIT mode without taking action

  While in BLOCK mode, you may position the cursor and then hit:
     <F1><AL> ...Highlight all lines from cursor to top of routine
     <F1><AR> ...Highlight all lines from cursor to bottom of routine

  When you've returned to EDIT mode, position the cursor and hit <ESC>V
  to paste saved lines into the current routine. The new lines will be
  inserted below the cursor. In MENU BAR mode you can branch to other routines
  save code to the clipboard, return to the current routine, and paste the
  code in.
```

4.4 COMMON ROUTINE READER AND EDITOR FEATURES

The Routine Reader (VRR) and Routine Editor (E) share many features. Two very useful ones are the interactive Routine Lister and Global Lister.

ROUTINE LISTER

When reading a routine, you may place the cursor on the ^ in the routine reference and press <ESC>R to see the routine. The screen will clear and show the selected routine. This can be done up to four levels deep. Leaving this routine display (using <ESC><ESC> or ^) returns to the previous routine display.

GLOBAL LISTER

A global reference in a routine can be used to specify a global listing. Place the cursor on the ^ of the global reference and press <ESC>G. Nothing will seem to have happened, but be patient. Now, cursor into the global reference to include all literal subscripts ($J counts as literal) that you want to see and press <ESC>G again. A global listing will appear and when you leave it, it will return to the previous program listing.

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5 FILEMAN TOOLS

The VPE software provides several tools to make life easier for those who use File Manager.

5.1 VEDD - ELECTRONIC DATA DICTIONARY

The File Manager maintains detailed Data Dictionaries, but it only provides access to the extensive information via reports of all fields. Because these listings waste paper and are time consuming to generate, VEDD was conceived and programmed to provide rapid, online access.

The following dialogue shows a brief session with VEDD.

```
PRD,AAA>>..VEDD

  Select FILE: OPTION

  A.) FILE NAME:------------- OPTION
                                          F.) FILE ACCESS:
  B.) FILE NUMBER:----------- 19               DD______
                                               Read____
  C.) NUM OF FLDS:----------- 89               Write___
                                               Delete__
  D.) DATA GLOBAL:----------- ^DIC(19,         Laygo___

  E.) TOTAL GLOBAL ENTRIES:-- 928         G.) PRINTING STATUS:-- Off
===============================================================================
                              M A I N   M E N U

    X  Cross References      G  Fld Global Location      VGL  VGlobal Lister
   PI  Pointers IN           T  Templates                 PR  Printing-On/Off
   PO  Pointers OUT          D  File Description           H  Help
   GR  Groups                A  Globals In ASCII Order
   TR  Trace a Field         C  File Characteristics
    I  Indiv Fld Summary     R  Required Fields

  SELECT OPTION: I
```

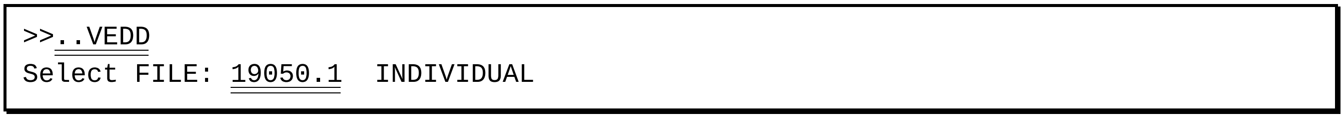
Notice that after selecting the file you are given a large menu of options that cover most aspects of a Data Dictionary. For example, see the next listing which describes a field in great detail: input transform, cross-references, etc.

```
  Select FIELD: 4  TYPE     [0;4] [RS]

-------------------------------------------------------------------------------
  FIELD NAME:       TYPE

  FLD NUMBER:       4              FLD TITLE:  THE TYPE OF OPTION
  NODE;PIECE:       0;4           HELP FRAME:  TYPE

      ACCESS:       RD:    DEL:    WR:

   DATA TYPE:       Set of Codes
                    Required field
                      A:action
                      E:edit
                      I:inquire
                       ....
                       ....
                      L:limited
                      C:ScreenMan

  INPUT TRANSFORM:  Q

  CROSS REF NAME:   AOR
            TYPE:   MUMPS
      Node: 1       I X="O"!(X="Q") S ^DIC(19,"AOR",$P(^DIC(19,DA,0),U,2),DA)
                    =""
      Node: 2       K ^DIC(19,"AOR",$P(^DIC(19,DA,0),U,2),DA)

                    This sets the "AOR" cross-reference on the file if the
                    option type is either
                    a protocol or a protocol menu.

  CROSS REF NAME:   AOH
            TYPE:   MUMPS
      Node: 1       D REDO^XQ7
      Node: 2       D REDO^XQ7

                    This cross-reference causes the option to be flagged
                    for updating in the menu
                    trees so that the changes effecting display and/or
                    access to the option are
                    correctly updated.

  DESCRIPTION:      This field indicates the 'category' or type of option. A
                    print-type option, for instance, will call FileMan to print
                    something.
                    ......
```

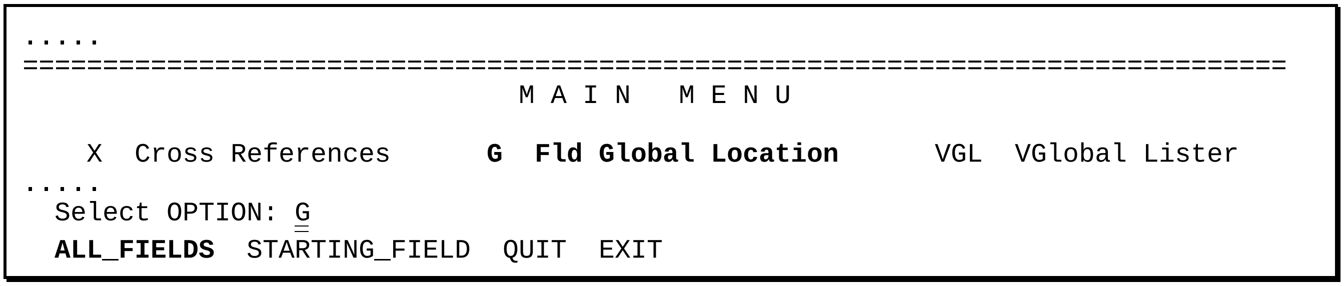
There are many other options of the VEDD module that we will test in class and that you should test when you get the software running.

5.2 FIELD GLOBAL LOCATIONS

Another very useful feature of the VEDD is the display of fields, in field number order, showing their location in the file's data global. From the field display, you can track down the fields on a specific node or use pointer field to navigate to another file's DD display. (The following displays reveal these features).

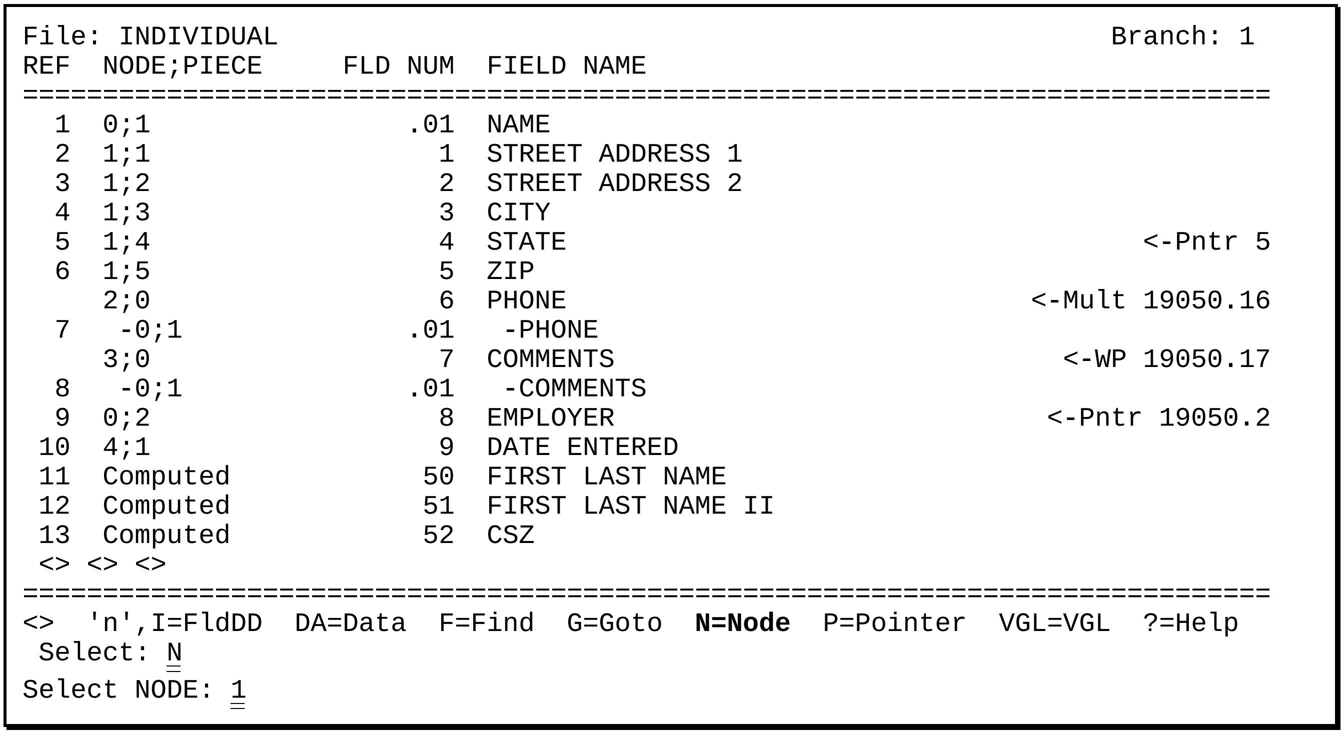


```
>>..VEDD
Select FILE: 19050.1  INDIVIDUAL
```



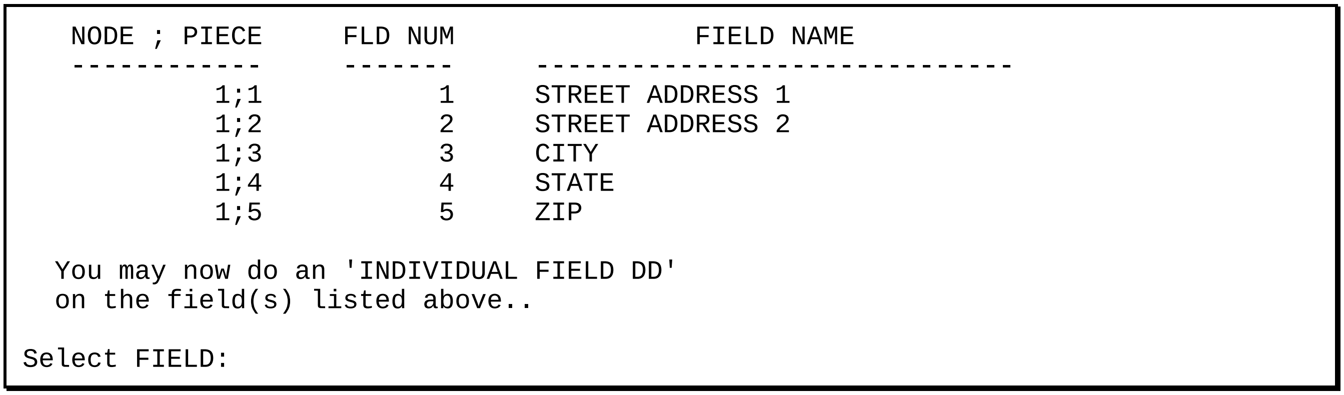
```
.....
===============================================================================
                               M A I N   M E N U

    X  Cross References      G  Fld Global Location      VGL  VGlobal Lister
.....
  Select OPTION: G
  ALL_FIELDS  STARTING_FIELD  QUIT  EXIT
```

The following display offers several options to explore the DD fields. In the example below, we select a specific global node for the next display.



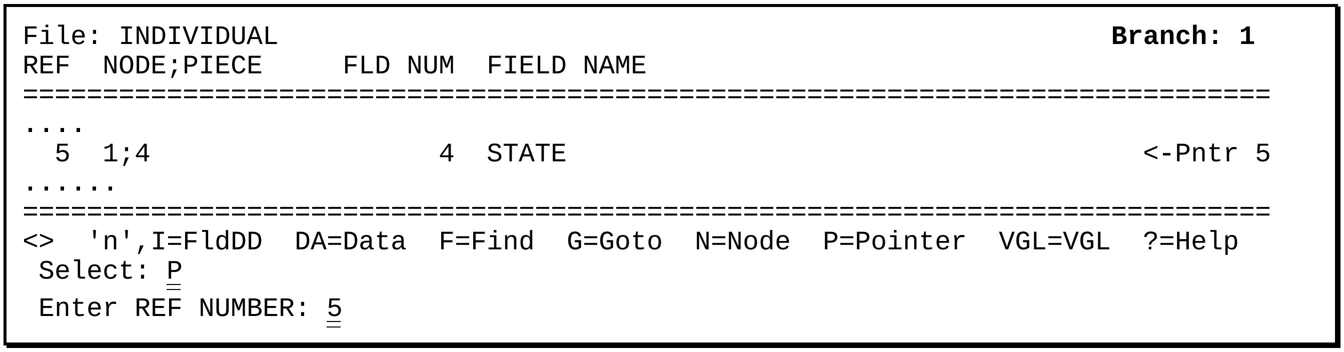
```
File: INDIVIDUAL                                                    Branch: 1
REF  NODE;PIECE     FLD NUM  FIELD NAME
==============================================================================
  1  0;1                .01  NAME
  2  1;1                  1  STREET ADDRESS 1
  3  1;2                  2  STREET ADDRESS 2
  4  1;3                  3  CITY
  5  1;4                  4  STATE                                    <-Pntr 5
  6  1;5                  5  ZIP
     2;0                  6  PHONE                             <-Mult 19050.16
  7   -0;1              .01   -PHONE
     3;0                  7  COMMENTS                            <-WP 19050.17
  8   -0;1              .01   -COMMENTS
  9  0;2                  8  EMPLOYER                           <-Pntr 19050.2
 10  4;1                  9  DATE ENTERED
 11  Computed            50  FIRST LAST NAME
 12  Computed            51  FIRST LAST NAME II
 13  Computed            52  CSZ
 <> <> <>
==============================================================================
<>  'n',I=FldDD  DA=Data  F=Find  G=Goto  N=Node  P=Pointer  VGL=VGL  ?=Help
 Select: N
Select NODE: 1
```

Here we see the fields for the selected node and we have the option to explore any of the fields in great detail.

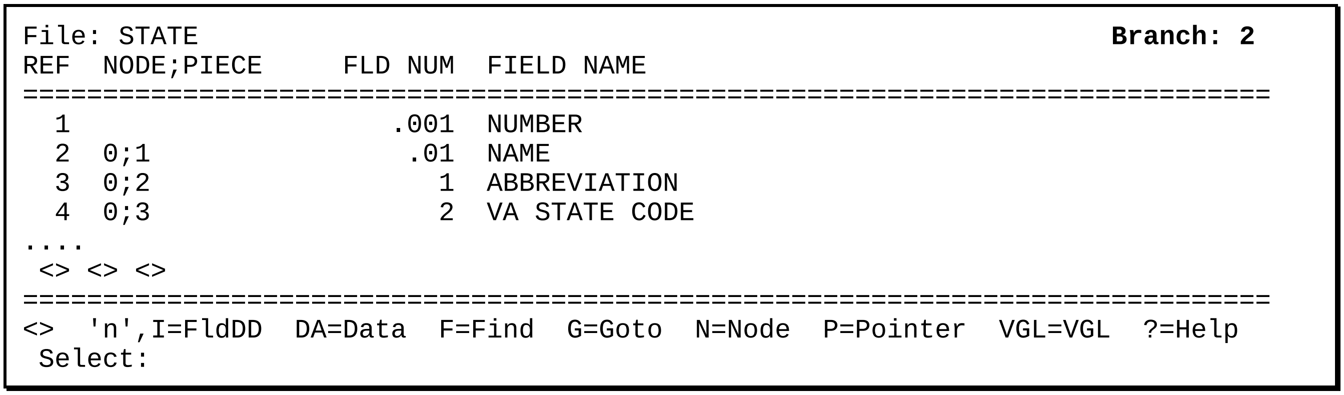


```
    NODE ; PIECE     FLD NUM               FIELD NAME
    ------------     -------     ------------------------------
             1;1           1     STREET ADDRESS 1
             1;2           2     STREET ADDRESS 2
             1;3           3     CITY
             1;4           4     STATE
             1;5           5     ZIP

   You may now do an 'INDIVIDUAL FIELD DD'
   on the field(s) listed above..

 Select FIELD:
```

The following two displays show how to use a field to navigate to another file's DD using pointer information. (Notice how the Branch information in the upper right hand corner of the display, changes to indicate the new location.)



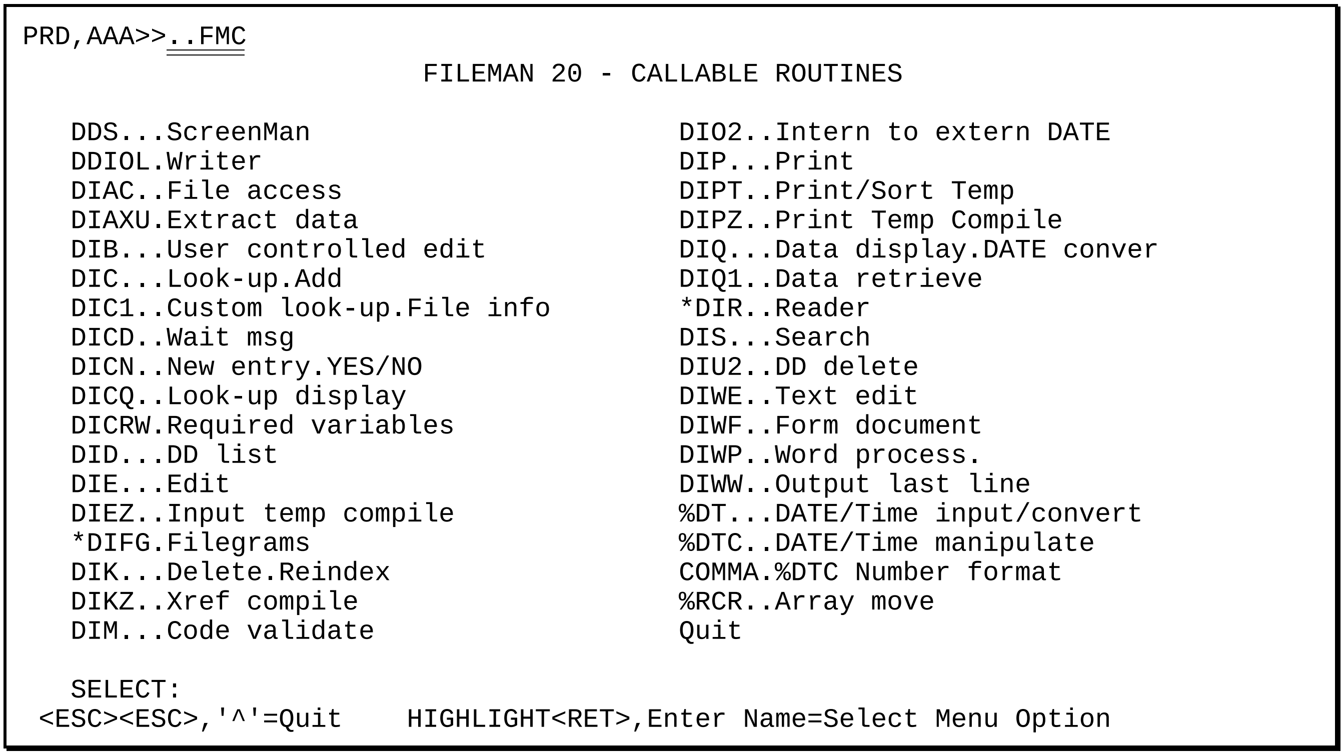
```
File: INDIVIDUAL                                                   Branch: 1
REF  NODE;PIECE     FLD NUM  FIELD NAME
==============================================================================
....
  5  1;4                  4  STATE                                    <-Pntr 5
......
==============================================================================
<>  'n',I=FldDD  DA=Data  F=Find  G=Goto  N=Node  P=Pointer  VGL=VGL  ?=Help
 Select: P
 Enter REF NUMBER: 5
```



```
File: STATE                                                        Branch: 2
REF  NODE;PIECE     FLD NUM  FIELD NAME
==============================================================================
  1                    .001  NUMBER
  2  0;1                .01  NAME
  3  0;2                  1  ABBREVIATION
  4  0;3                  2  VA STATE CODE
....
 <> <> <>
==============================================================================
<>  'n',I=FldDD  DA=Data  F=Find  G=Goto  N=Node  P=Pointer  VGL=VGL  ?=Help
 Select:
```

5.3 FILEMAN UTILITIES - HELP TEXT

The ..FMC QWIK provides online access to documentation of FileMan utility calls. This will not obsolete the FileMan manuals, but it can help jog the memory of the experienced programmer. (The screen displays for each topic are scrollable lists.)



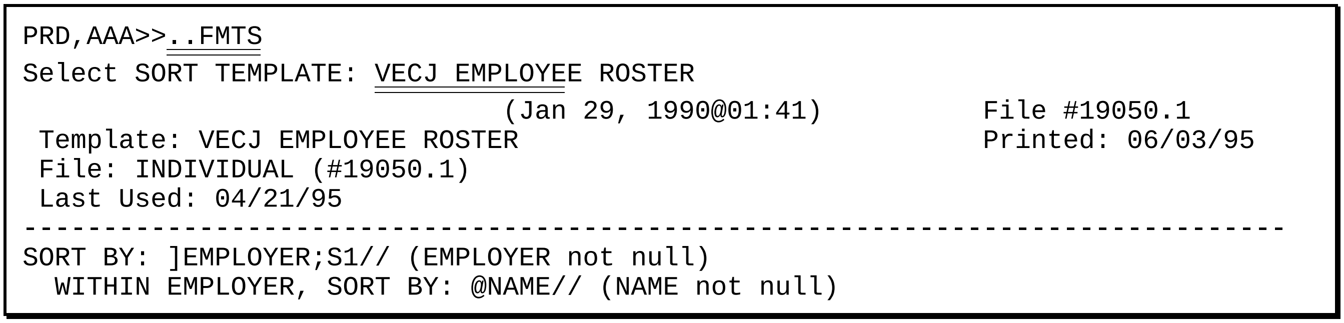
```
PRD,AAA>>..FMC
                         FILEMAN 20 - CALLABLE ROUTINES

   DDS...ScreenMan                       DIO2..Intern to extern DATE
   DDIOL.Writer                          DIP...Print
   DIAC..File access                     DIPT..Print/Sort Temp
   DIAXU.Extract data                    DIPZ..Print Temp Compile
   DIB...User controlled edit            DIQ...Data display.DATE conver
   DIC...Look-up.Add                     DIQ1..Data retrieve
   DIC1..Custom look-up.File info        *DIR..Reader
   DICD..Wait msg                        DIS...Search
   DICN..New entry.YES/NO                DIU2..DD delete
   DICQ..Look-up display                 DIWE..Text edit
   DICRW.Required variables              DIWF..Form document
   DID...DD list                         DIWP..Word process.
   DIE...Edit                            DIWW..Output last line
   DIEZ..Input temp compile              %DT...DATE/Time input/convert
   *DIFG.Filegrams                       %DTC..DATE/Time manipulate
   DIK...Delete.Reindex                  COMMA.%DTC Number format
   DIKZ..Xref compile                    %RCR..Array move
   DIM...Code validate                   Quit

   SELECT:
 <ESC><ESC>,'^'=Quit    HIGHLIGHT<RET>,Enter Name=Select Menu Option
```

5.4 TEMPLATE DISPLAYS

The VPE software comes with QWIKs that make documented calls to the File Manager to display templates online. This is much more convenient than having to use or edit the template in order to see its specifications.

5.4.1 SORT

Here is the online display of a sort template.



```
PRD,AAA>>..FMTS
Select SORT TEMPLATE: VECJ EMPLOYEE ROSTER
                              (Jan 29, 1990@01:41)         File #19050.1
 Template: VECJ EMPLOYEE ROSTER                            Printed: 06/03/95
 File: INDIVIDUAL (#19050.1)
 Last Used: 04/21/95
-------------------------------------------------------------------------------
SORT BY: ]EMPLOYER;S1// (EMPLOYER not null)
  WITHIN EMPLOYER, SORT BY: @NAME// (NAME not null)
```

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5.4.2 PRINT

Here is the online display of a print template.

```
PRD,AAA>>..FMTP

Select PRINT TEMPLATE: VECJ EMPLOYEE ROSTER
                              (Jan 29, 1990@09:21)          File #19050.1
 Template: VECJ EMPLOYEE ROSTER                             Printed: 06/03/95
 File: INDIVIDUAL (#19050.1)
 Last Used: 04/21/95
-------------------------------------------------------------------------------
FIRST PRINT FIELD: NAME;S1//
THEN PRINT FIELD: STREET ADDRESS 1;C1;""//
THEN PRINT FIELD: STREET ADDRESS 2;C1;""//
THEN PRINT FIELD: CITY;C1;""//
THEN PRINT FIELD: ", ";X//
THEN PRINT FIELD: STATE:ABBREVIATION;X//
THEN PRINT FIELD: "  ";X//
THEN PRINT FIELD: ZIP;X//
THEN PRINT FIELD: COMMENTS;C3;W70//
```

5.4.3 INPUT

Here is the online display of a input template. (NOTE: this QWIK calls a FM routine that may not properly display some templates that use navigation to other files).

```
PRD,AAA>>..FMTI

Select INPUT TEMPLATE: VETV BETTER BRANCH    (APR 17, 1992@17:12) FILE #19056.1

 Template: VECJ BETTER BRANCH                               Printed: 06/03/95
 File: INDIVIDUAL (#19050.1)
 Last Used:
-------------------------------------------------------------------------------
FIRST EDIT FIELD: NAME//
THEN EDIT FIELD: STREET ADDRESS 1//
THEN EDIT FIELD: S:X=""&($S($D(^VECJ(19050.1,D0,1)):$P(^(1),U,1,5),1:"")?."^") Y
="@1"//
THEN EDIT FIELD: STREET ADDRESS 2//
THEN EDIT FIELD: CITY//
THEN EDIT FIELD: STATE//
THEN EDIT FIELD: ZIP//
THEN EDIT FIELD: @1//
THEN EDIT FIELD: PHONE//
  THEN EDIT FIELD: PHONE//
```

6 KERNEL TOOLS

6.1 HELP TEXT FOR KERNEL OPTIONS

The ..XQH QWIK snoops in an option in the OPTION file to see if it has help text. If it finds text, it is displayed and then control is returned to the Shell.

```
PRD,AAA>>..XQH

Select OPTION NAME: XM-NEW-FEATURES         Features New in Version 7 MailMan

                      New Features in MailMan v7

MailMan 7 is released with Kernel 7 & includes the following enhancements:

 1.  The 'QUERY' command, given at the 'Message Action:' prompt, now has
     3 forms: 'Q'=addressed as, 'QD'=full detail (like previous versions)
     & 'QN' to see network routing.
 2.  There is a SHARED,MAIL user for public posting of messages.
 3.  An X.500 directory exists to help address remote recipients.
 4.  There are utilities for managing LATER'D Mail.
 5.  MAIL GROUPS may include remote members and Distribution Lists.
 6.  Copying messages has been simplified.
 7.  You may assign an AUTOMATIC DELETION DATE to a message in a basket.
 8.  You may override the Message Action Default.
 9.  There is a field in the user options to control display of titles.
10.  You may assign yourself a text editor from your site's approved list.
11.  The WRITE command sends a new message at the message action prompt.
12.  You may assign a VAPORIZATION DATE to a message in a mail basket.

Select HELP SYSTEM action or <return>:
PRD,AAA>>
```

6.2 RUNNING VPE AS A KERNEL OPTION

You may wish to make VPE a command menu item, so you can easily fall into VPE, from any Kernel menu, and then halt out of VPE back to the Kernel menus. This means you may never go into 'raw' programmer mode ever again! (In actuality, VPE's interaction with vendor debugging and error trapping is not perfected and is one of the main reasons some VPEers still go into programmer mode.)

The name of the option you create MUST include the word VSHELL in order for this work. A sample Option to run VPE is shown below.

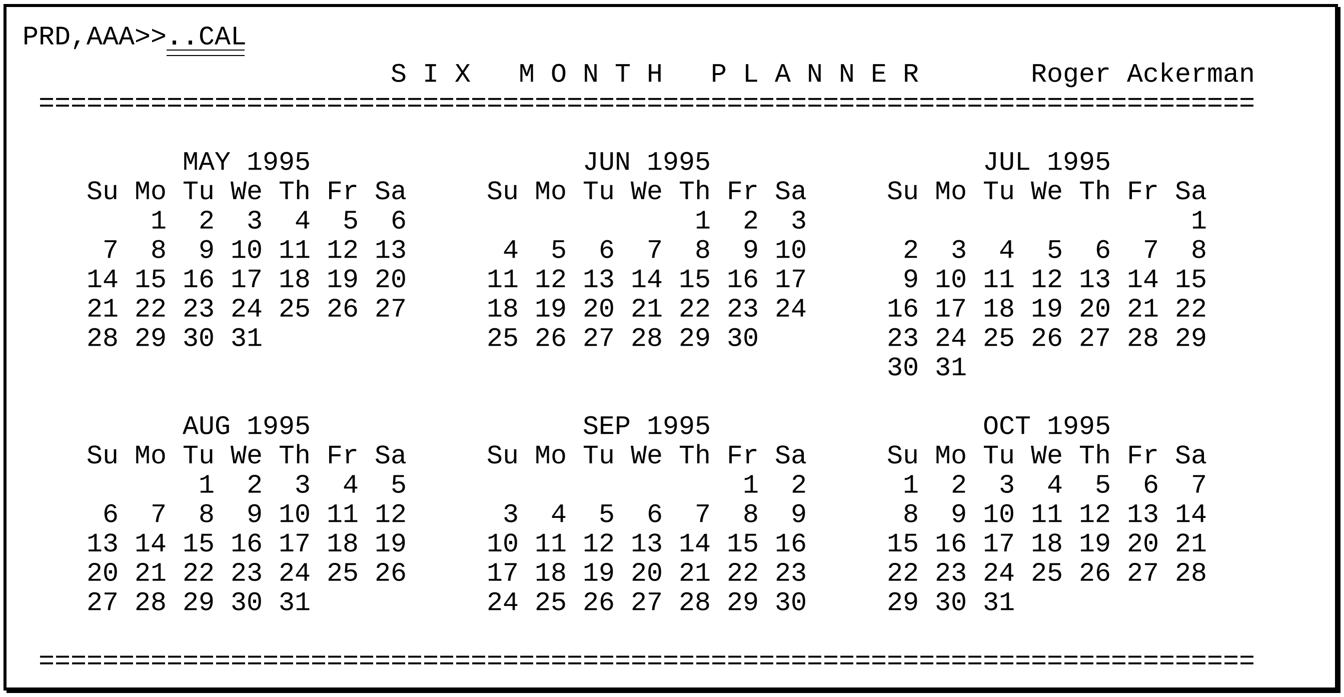
```
NAME: ZZ VSHELL                         MENU TEXT: Vshell
  TYPE: action                          CREATOR: KREIS,GREG
  E ACTION PRESENT: YES                 ENTRY ACTION: X "N XQY0 X ^%ZVEMS"
  TIMESTAMP OF PRIMARY MENU: 55990,1443 UPPERCASE MENU TEXT: VSHELL
```

7 MISCELLANEOUS TOOLS

Listed below are just a few of the many tools that come with the VPE software. You are encouraged to explore them all! Some of these tools were written by other programmers (their are identities are made known if permitted).

7.1 CALENDAR

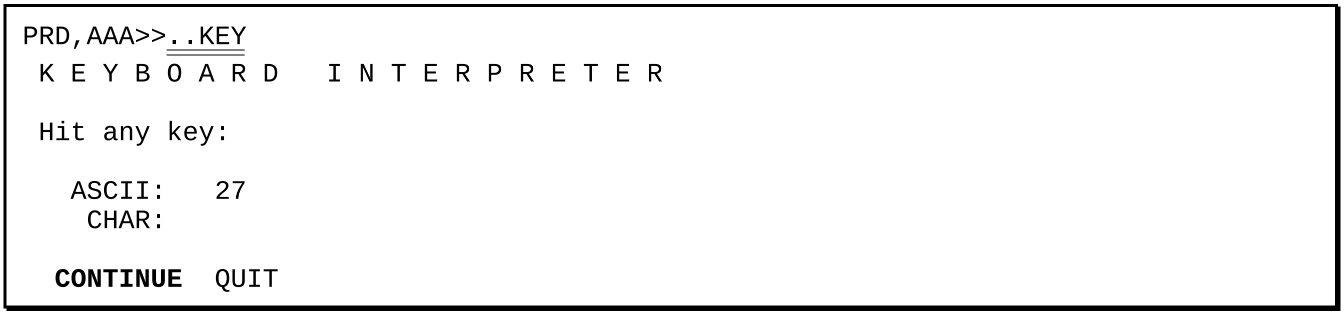
A desk top calendar can be very handy. This QWIK can only display a calendar, scheduling is not included.



```
PRD,AAA>>..CAL
                       S I X   M O N T H   P L A N N E R       Roger Ackerman
 ============================================================================

          MAY 1995                 JUN 1995                 JUL 1995
    Su Mo Tu We Th Fr Sa     Su Mo Tu We Th Fr Sa     Su Mo Tu We Th Fr Sa
        1  2  3  4  5  6                  1  2  3                        1
     7  8  9 10 11 12 13      4  5  6  7  8  9 10      2  3  4  5  6  7  8
    14 15 16 17 18 19 20     11 12 13 14 15 16 17      9 10 11 12 13 14 15
    21 22 23 24 25 26 27     18 19 20 21 22 23 24     16 17 18 19 20 21 22
    28 29 30 31              25 26 27 28 29 30        23 24 25 26 27 28 29
                                                      30 31

          AUG 1995                 SEP 1995                 OCT 1995
    Su Mo Tu We Th Fr Sa     Su Mo Tu We Th Fr Sa     Su Mo Tu We Th Fr Sa
           1  2  3  4  5                     1  2      1  2  3  4  5  6  7
     6  7  8  9 10 11 12      3  4  5  6  7  8  9      8  9 10 11 12 13 14
    13 14 15 16 17 18 19     10 11 12 13 14 15 16     15 16 17 18 19 20 21
    20 21 22 23 24 25 26     17 18 19 20 21 22 23     22 23 24 25 26 27 28
    27 28 29 30 31           24 25 26 27 28 29 30     29 30 31

 ============================================================================
```

7.2 IDENTIFYING KEY SEQUENCES

When debugging some programs, it is can be helpful to know what characters are being sent by a terminal. Simply summon the ..KEY QWIK and then press different keys to see what they generate.



```
PRD,AAA>>..KEY
 K E Y B O A R D   I N T E R P R E T E R

 Hit any key:

   ASCII:   27
    CHAR:

  CONTINUE  QUIT
```

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7.3 ASCII TABLE

Have you ever been frustrated because you could not remember the ASCII code for the letter T? Well, sweat no more. The ..ASCII QWIK very quickly displays a listing of the ASCII character set.

```
PRD,AAA>>..ASCII

                          A S C I I   C H A R A C T E R   S E T

Dec  Chr  Dec  Chr  Dec  Chr  Dec  Chr  Dec  Chr  Dec  Chr  Dec  Chr  Dec  Chr
===============================================================================
  0  NUL | 16  DLE | 32  SP  | 48  0   | 64  @   | 80  P   | 96  `   |112  p
  1  SOH | 17  DC1 | 33  !   | 49  1   | 65  A   | 81  Q   | 97  a   |113  q
  2  STX | 18  DC2 | 34  "   | 50  2   | 66  B   | 82  R   | 98  b   |114  r
  3  ETX | 19  DC3 | 35  #   | 51  3   | 67  C   | 83  S   | 99  c   |115  s
  4  EOT | 20  DC4 | 36  $   | 52  4   | 68  D   | 84  T   |100  d   |116  t
  5  ENQ | 21  NAK | 37  %   | 53  5   | 69  E   | 85  U   |101  e   |117  u
  6  ACK | 22  SYN | 38  &   | 54  6   | 70  F   | 86  V   |102  f   |118  v
  7  BEL | 23  ETB | 39  '   | 55  7   | 71  G   | 87  W   |103  g   |119  w
  8  BS  | 24  CAN | 40  (   | 56  8   | 72  H   | 88  X   |104  h   |120  x
  9  HT  | 25  EM  | 41  )   | 57  9   | 73  I   | 89  Y   |105  i   |121  y
 10  LF  | 26  SUB | 42  *   | 58  :   | 74  J   | 90  Z   |106  j   |122  z
 11  VT  | 27  ESC | 43  +   | 59  ;   | 75  K   | 91  [   |107  k   |123  {
 12  FF  | 28  FS  | 44  ,   | 60  <   | 76  L   | 92  \   |108  l   |124  |
 13  CR  | 29  GS  | 45  -   | 61  =   | 77  M   | 93  ]   |109  m   |125  }
 14  SO  | 30  RS  | 46  .   | 62  >   | 78  N   | 94  ^   |110  n   |126  ~
 15  SI  | 31  US  | 47  /   | 63  ?   | 79  O   | 95  _   |111  o   |127  DEL
===============================================================================
```

8 SUMMARY

VPE is a powerful way to standardize your M working environment while offering flexible options to the programmer to adapt to their unique needs.

VPE is constantly evolving and needs your error reports as well as your suggestions. In order to share tricks among VPE users and communicate needs to the developer, join the VPE USERS mail group on FORUM. If you don't have access to the VA's FORUM system, share ideas and keep current by visiting the Hardhats.Org site (http://www.hardhats.org/).

Happy environments to you!